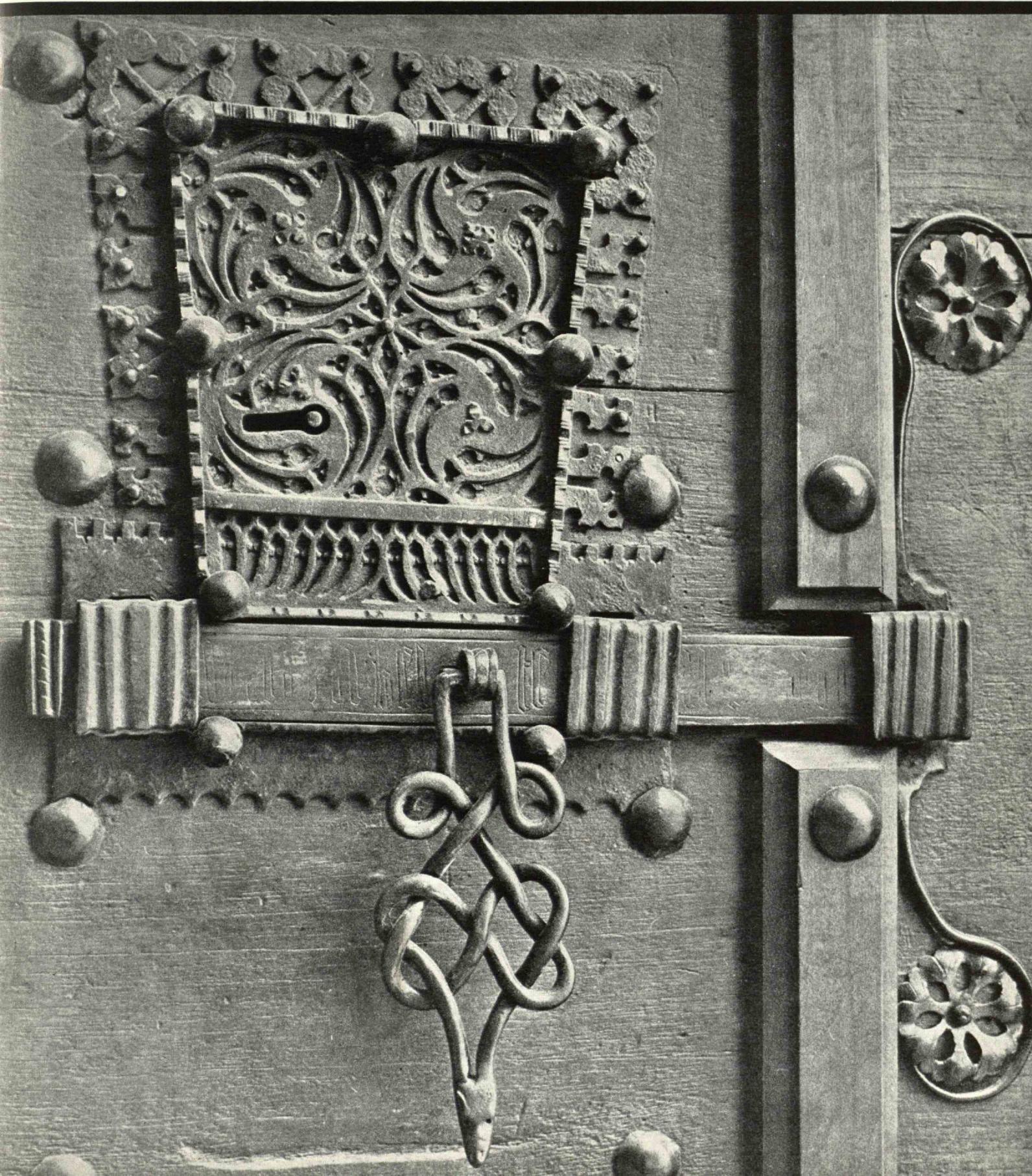


November 1943

TECHNOLOGY REVIEW

Title Reg. in U. S. Pat. Office



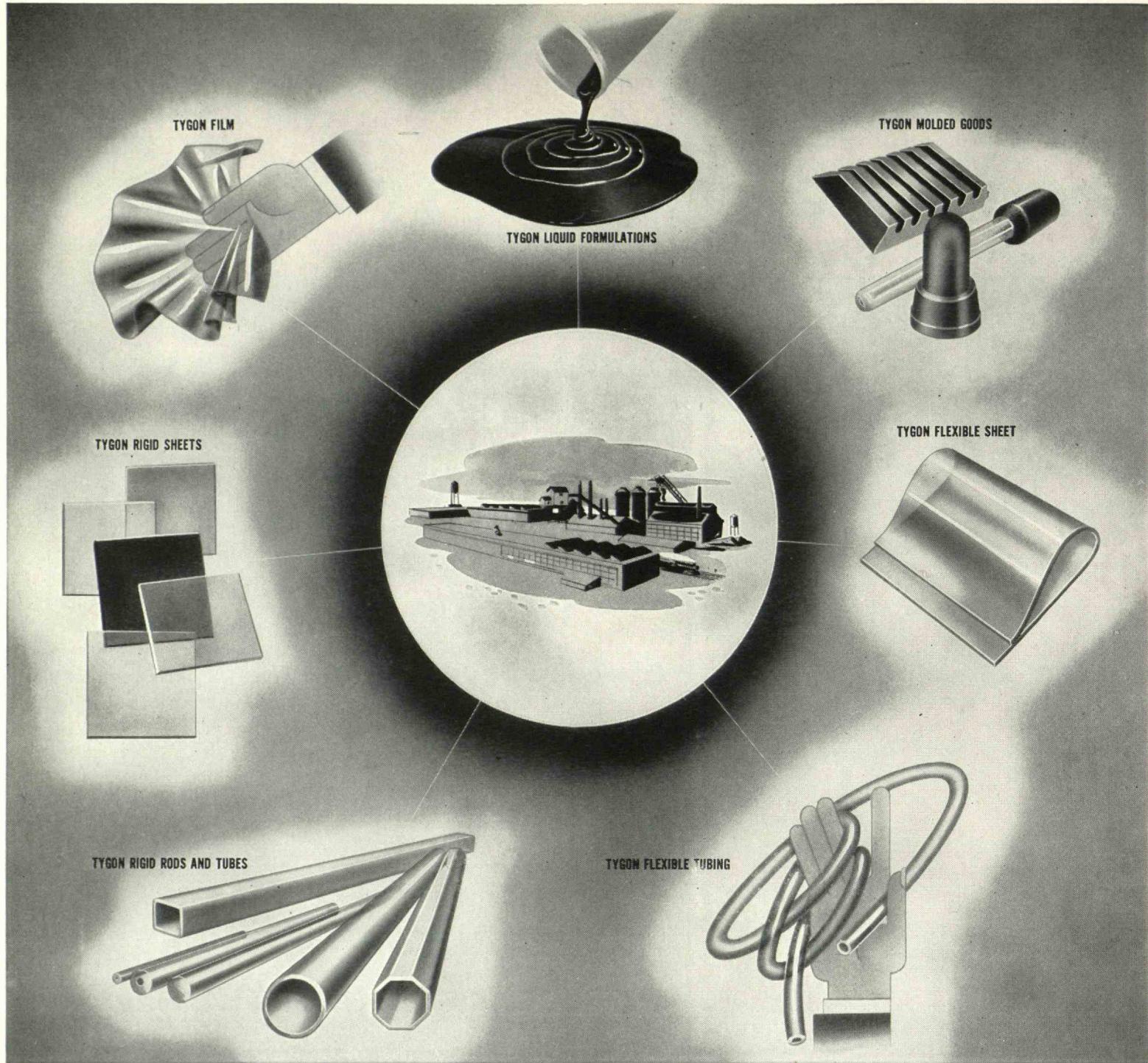
technology review

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TYGON Basic Material of Industry

IF WE were asked to name the outstanding characteristic of the Tygon series of synthetics, we would rank "versatility" first. The Tygons, basically, possess many natural qualities which give them high ranking among design materials, and, being man-made, may be built to provide almost an unlimited number of modifications to suit highly specialized requirements.

From a physical point of view: They may be rigid, or flexible; transparent, translucent, or opaque; they are almost unlimited in the range of their color possibilities. Most of the Tygons may be molded as readily as rubber; some formulations may be cast, others cal-

endered; all may be placed in solution for use as a paint or for impregnation. Tygon may be compounded to remain flexible at temperatures as low as -104° F., and while normal top operating temperature ranges between 165° and 180° F., newer formulations, now in experimental stage only, show promise of being able to withstand heat up to as high as 300° F.

Viewed from their chemical characteristics: Most of the Tygons are unaffected by time, unchanged under sunlight, immune to fresh or salt water; impervious to oil or grease; highly resistant to acids and alkalies, and to many solvents. Most Tygon formulations are non-flammable;

they are odorless, tasteless, and relatively non-toxic, and may be compounded to be completely non-toxic where necessary.

Would you like to learn more about the Tygons? Write today for Bulletin 1620-E. No cost, no obligation. Address your requests to: The U. S. Stoneware Company, Akron, Ohio, or, if you live in Canada, to: Chamberlain Engineering (Canada), Ltd., Montreal.





He was a MASTER MECHANIC

*... an avoidable eye
injury robbed him of
his much-needed skill*

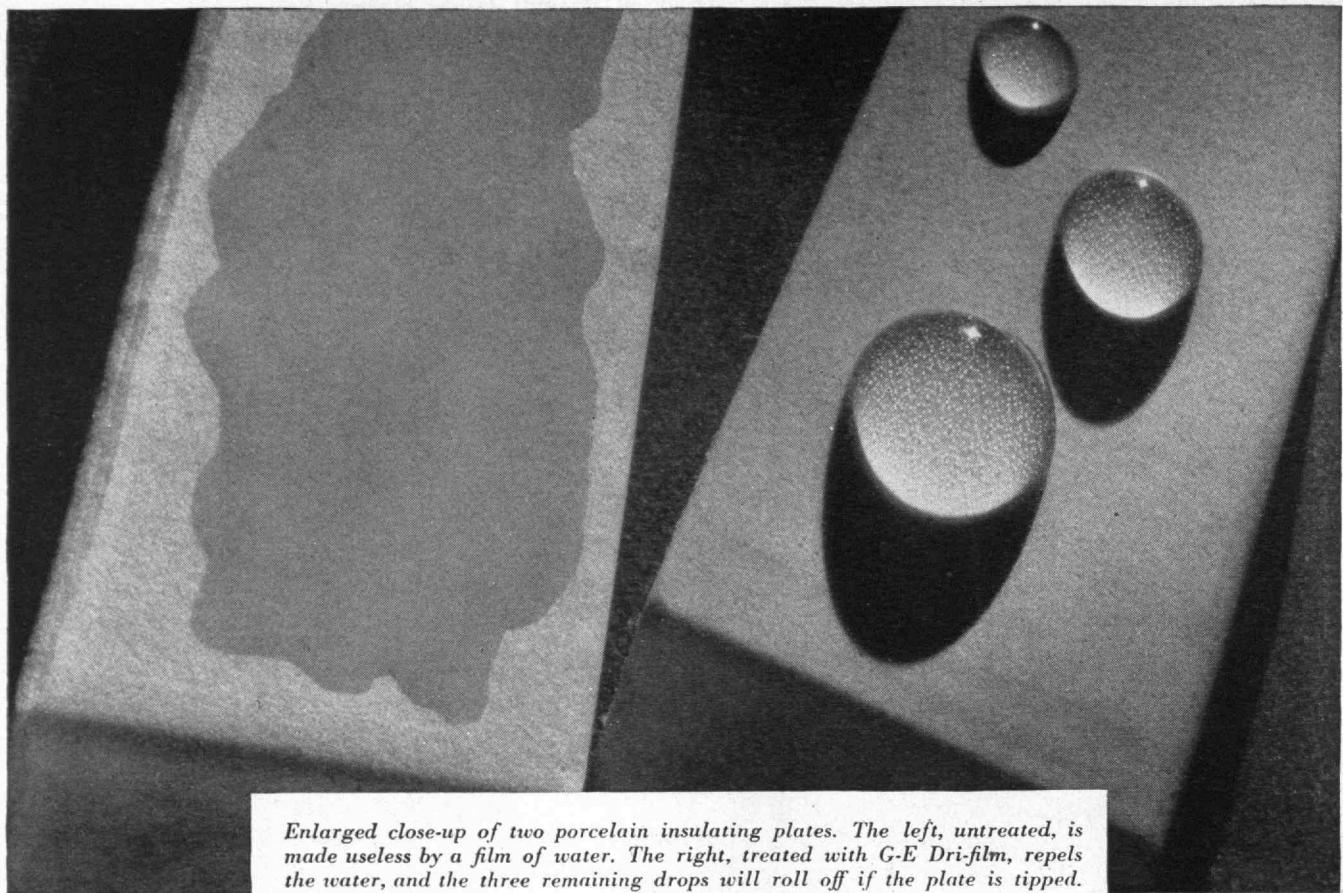
PROTECT YOUR WORKERS WITH AO GOGGLES

In split-seconds, injuries to unprotected eyes can cost you the services of workers you have spent years training . . . workers who are practically irreplaceable today.

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American Optical
COMPANY
SOUTHBRIDGE, MASSACHUSETTS
World's Largest Manufacturers of Products to Aid
and Protect Vision



Enlarged close-up of two porcelain insulating plates. The left, untreated, is made useless by a film of water. The right, treated with G-E Dri-film, repels the water, and the three remaining drops will roll off if the plate is tipped.

How to cure a Flying Radio's LARYNGITIS

THREE USED TO BE a lot of trouble, every time an American pilot in a dogfight dropped a radio set 20,000 feet. Not crash trouble, for in the cases we're talking about the radio was in the plane and the pilot pulled out of the dive.

But sometimes the radio lost its voice. For the sudden plunge from cold to warmer air produced condensation of moisture—like the fog that collects on your glasses when you come indoors on a winter's day. A film of moisture formed on the radio's insulators; the film let the electricity leak away; the radio quit dead! And that was bad—since a modern fighting plane depends almost as much on its radio as it does on its wings.

But not so long ago General Electric scientists found a way around this difficulty. For if a porcelain insulator is exposed, for just a few seconds, to the

vapor of a composition called G-E Dri-film—then the whole nature of the insulator's surface is changed. It looks just the same, but moisture doesn't gather any longer in a conducting film. Instead, it collects in isolated droplets that don't bother the radio a bit. The set keeps right on talking.

Today the voices of most military radios are being safeguarded by treating their insulators with G-E Dri-film. And the research that cures a radio's laryngitis is the same kind that has licked the problems of the turbo-supercharger, and has packed the driving power of a destroyer into turbines not much bigger than a couple of trunks. It's the kind of research we're counting on, tomorrow, to turn the discoveries of wartime into peacetime products we can all use. *General Electric Co., Schenectady, N. Y.*



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HEAR THE GENERAL ELECTRIC RADIO PROGRAMS: THE "G-E ALL-GIRL ORCHESTRA" SUNDAY 10 P.M. EWT, NBC—
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kind
do you need?

Sandee

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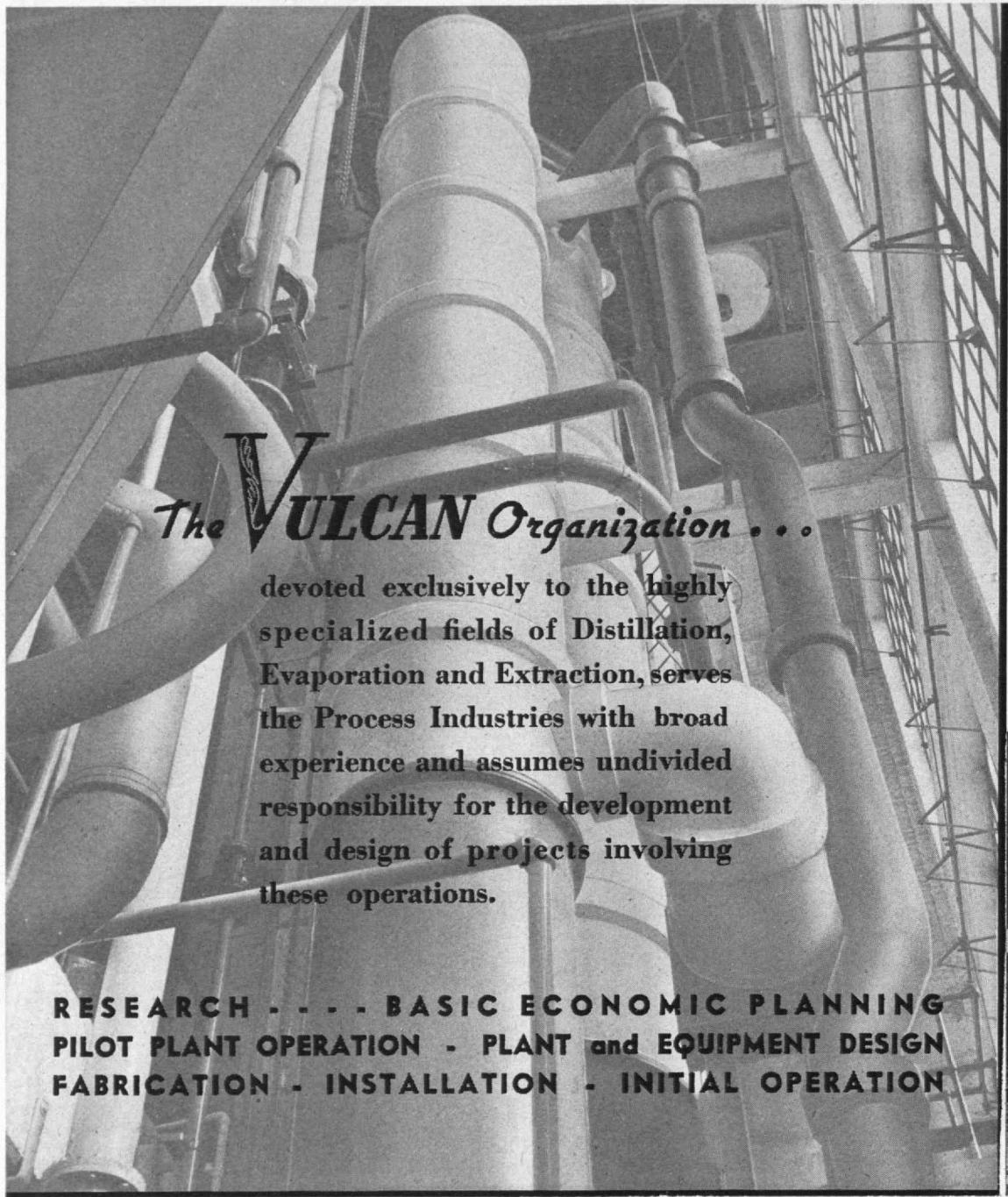
NO matter what size, thickness, length, color, or degree of flexibility . . . there's a SANDEE Flexible Plastic Tubing to meet practically every need. This versatile modern product has replaced rubber and metal tubing for many different uses. Its excellent insulating and non-oxidizing qualities make it exceptionally well adapted for use with electrical products. Its tensile strength and high resistance to acids, oils, and greases win quick preference for battery drains, oil lines, and other uses. Investigate, now, the many superior advantages of Sandee Plastic Tubing . . . precision-made by long experienced plastics engineers. Send for samples and complete information. Sandee also manufactures a large line of stock and custom-made extruded plastic sections. Complete information on request.

ELMER SZANTAY, M.E. '35, GENERAL MANAGER

Sandee Manufacturing Company

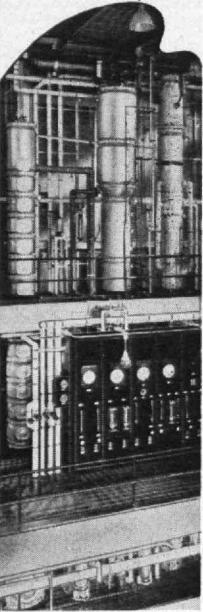
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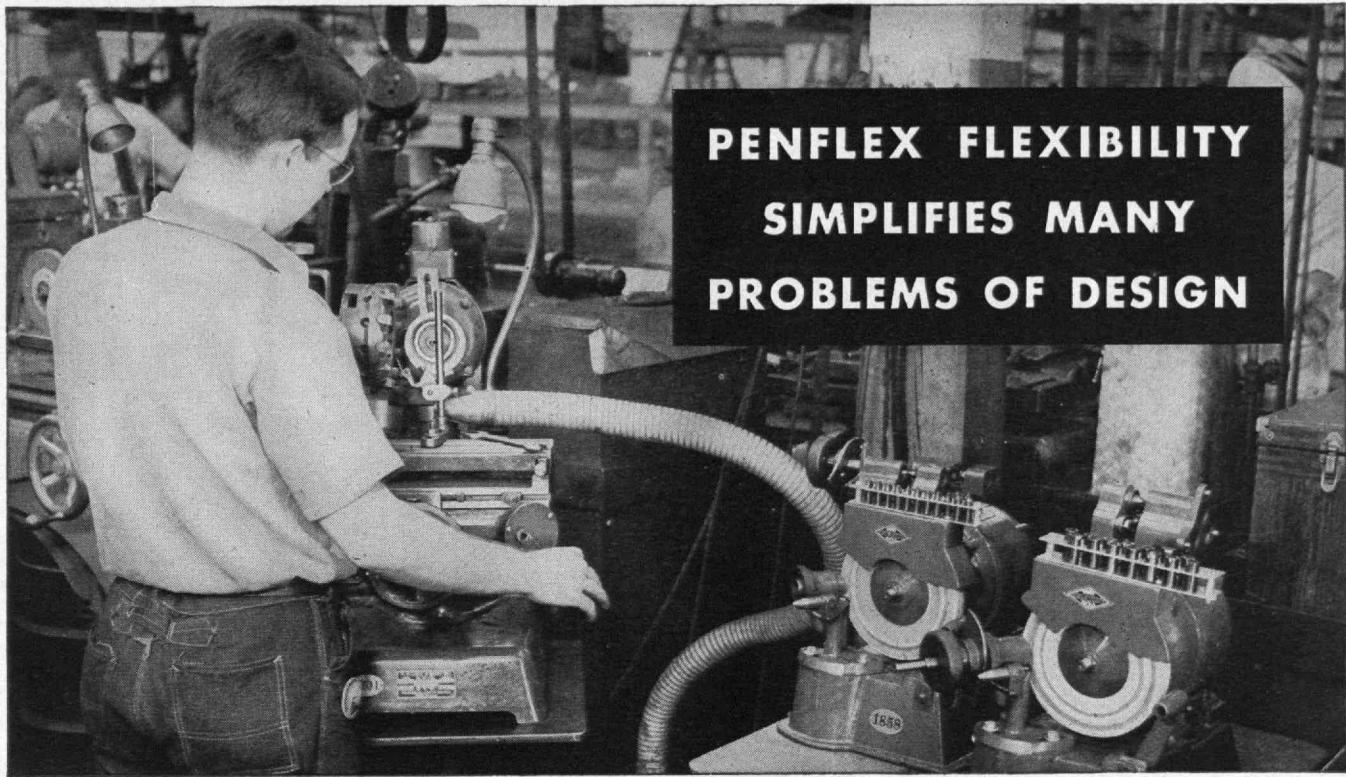
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SIMPLIFIES MANY
PROBLEMS OF DESIGN**

Photo Courtesy of Fidelity Machine Co.

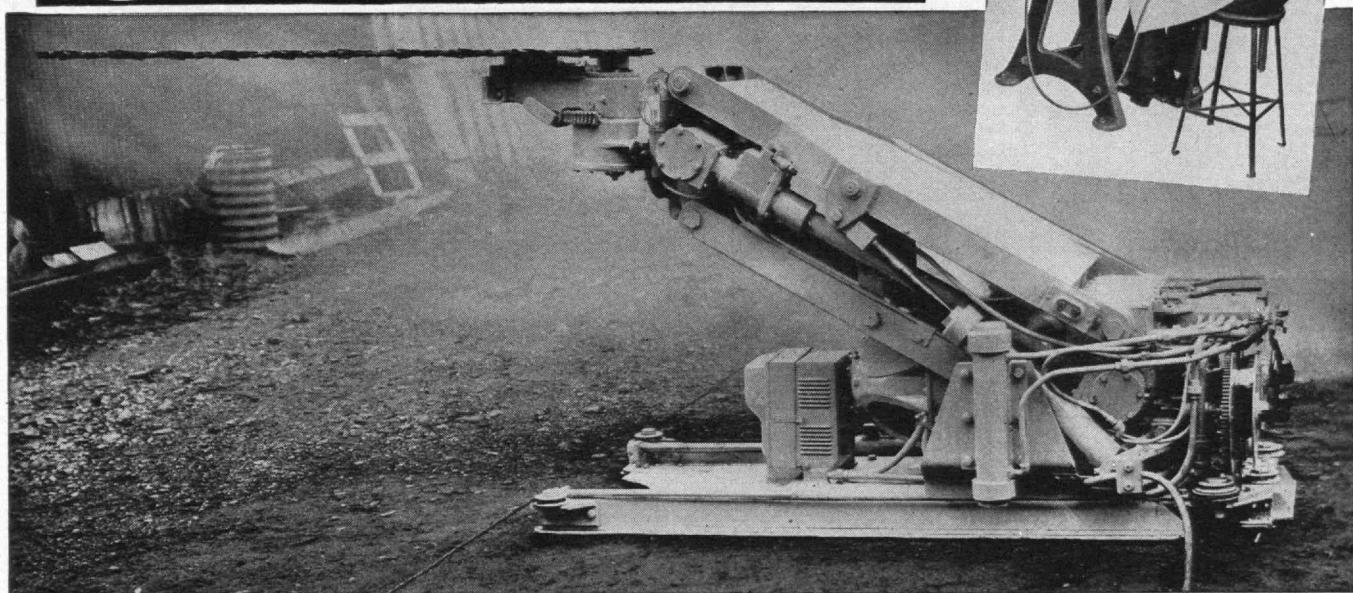
ILLUSTRATED are several applications of PENFLEX Flexible All-Metal Hose and Tubing, showing how PENFLEX simplifies design problems. Light in weight with flexibility to make inaccessible installations easy, PENFLEX All-Metal Hose and Tubing are suitable for mobile units, bilge ventilation, fume exhaust, dust collection, coolant conveying, hydraulic and air controls, vibration isolation, oil can and similar flexible spouting, armor for flexible shafting, conveying of dry granular materials, and many other applications in high or low pressures.

PENFLEX, tight as pipe but flexible, follows any desired path. Material flows through smooth, easy bends without sharp turns to clog.

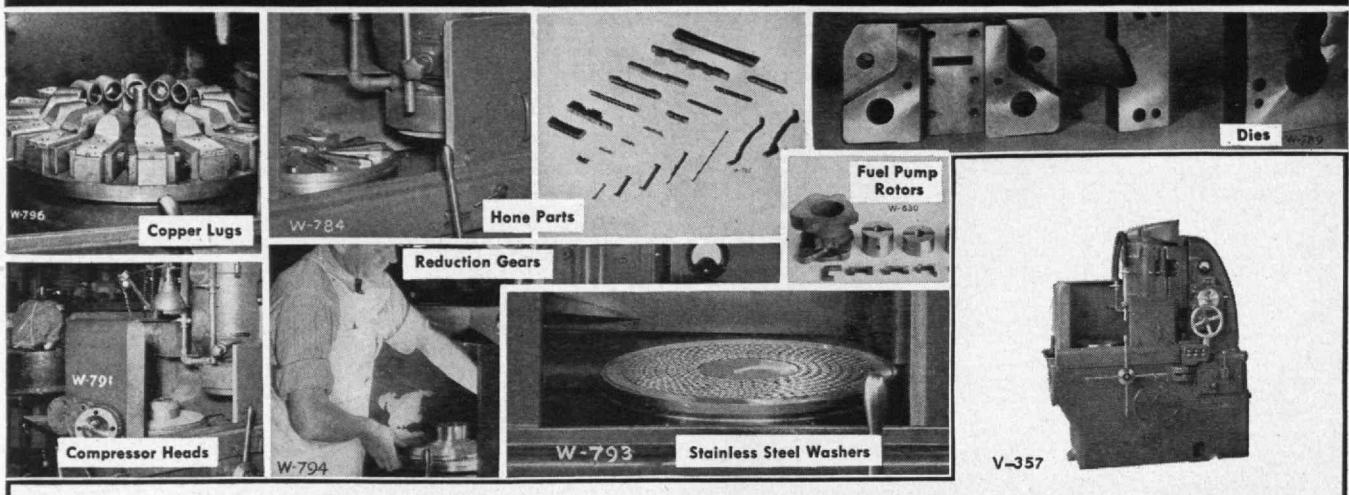
Tell us what type of material you are handling, and the operating pressures. We will send you data sheets promptly.



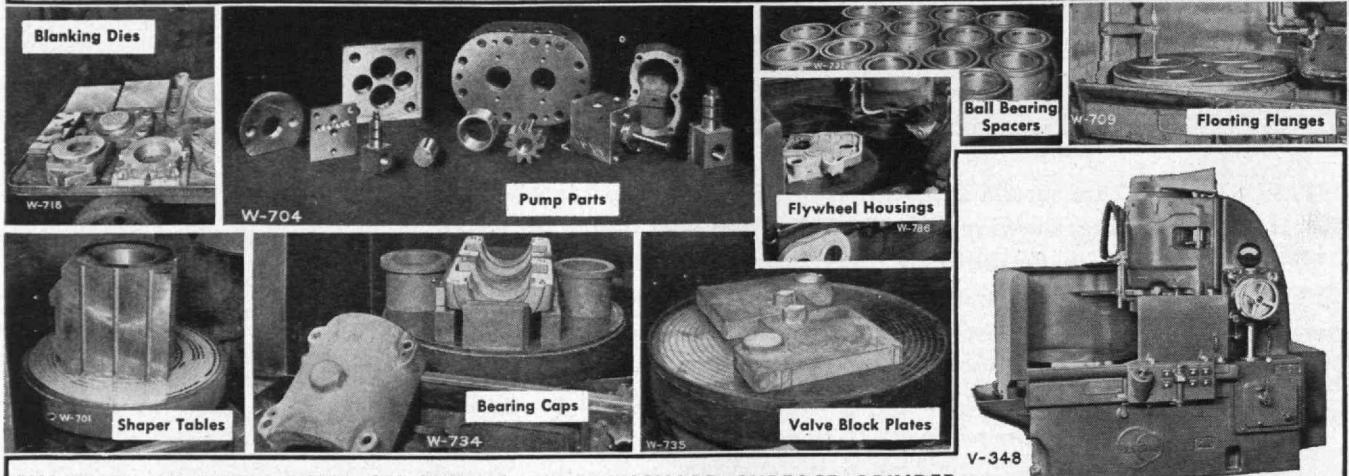
PENNSYLVANIA FLEXIBLE METALLIC TUBING CO.
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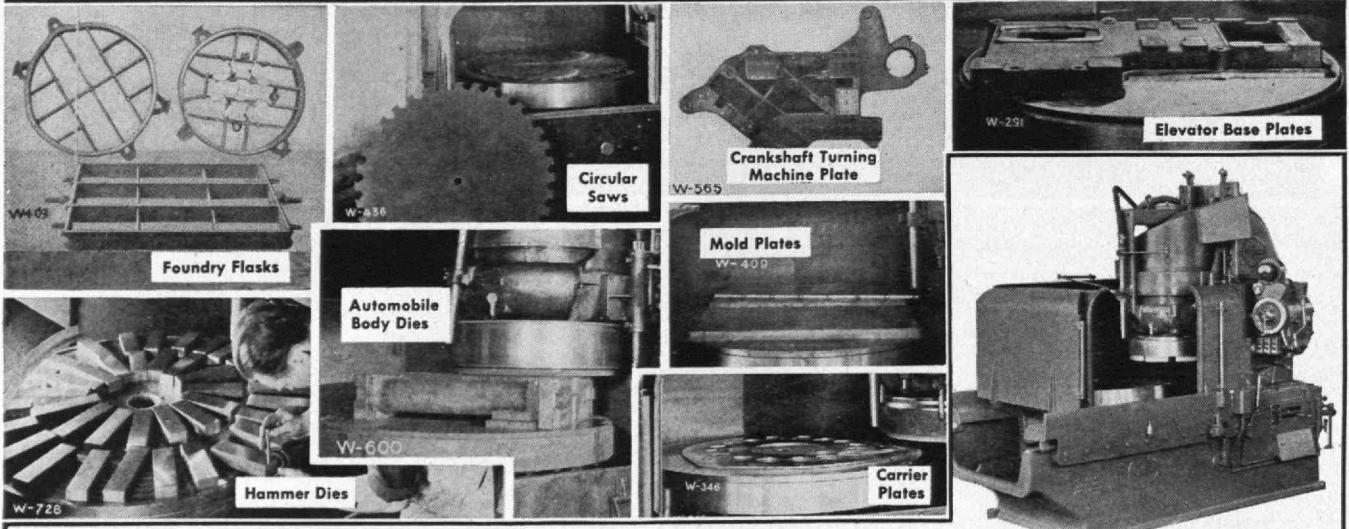
"PUT IT ON THE BLANCHARD"



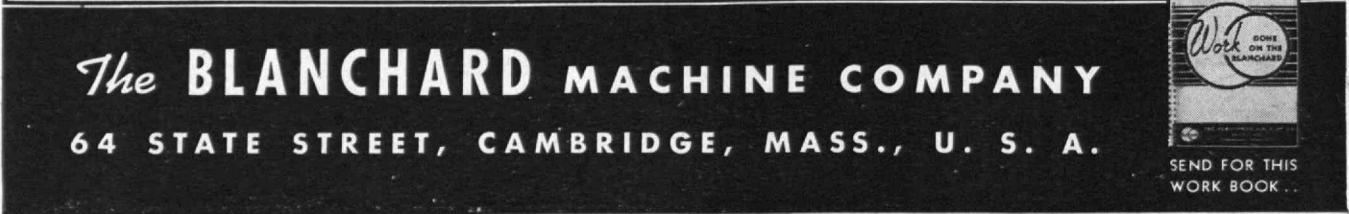
EXAMPLES OF WORK DONE ON THE NO. 11 BLANCHARD SURFACE GRINDER



EXAMPLES OF WORK DONE ON THE NO. 18 BLANCHARD SURFACE GRINDER



EXAMPLES OF WORK DONE ON THE NO. 27 BLANCHARD SURFACE GRINDER





Fighting a Fire Sometimes was Safer Than GOING TO IT

Firemen, of course, must work fast. In the old days, you were apt to be trampled to death when the alarm sounded. When the idea came along for a brass pole to let the fireman slide slick-as-a-whistle to the first floor, America took it up in a hurry.

Americans in every walk of life always have preferred simple operations to complicated ways of doing things. Hence the high favor in which Busch-Sulzer Diesels are held. Just a glimpse at these engines suggests their simplicity of design — and a careful check of details proves it. This is an important factor in the operating and maintenance economy of a Busch-Sulzer. It was first, you know, with the trunk piston principle in the larger Diesels — an innovation more than a dozen years ago, an established success today.

Although working 'round the clock on naval ordnance and engines for the Navy, Army and Maritime Commission, we can fill high priority orders for either stationary or marine Diesels in horsepower from 500 to 3000. We welcome your inquiry.

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SAINT LOUIS

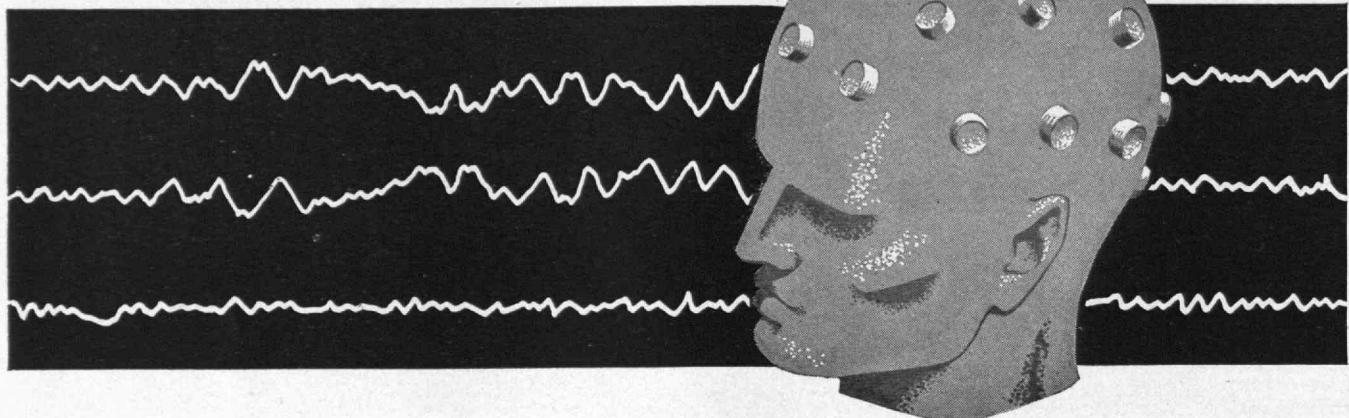


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AMERICA'S OLDEST BUILDER OF DIESEL ENGINES

TUNING IN ON

Brain Tissue



WITH IRC RESISTORS

Scientists have long known that living tissue generates minute electric potentials. But only recently have researchists been able to adapt this knowledge to clinical use on the human brain through means of the Electroencephalograph.

In its functioning, tiny electrodes are fastened to the skin by collodion at the points indicated in the illustration. The average potentials of only 50 microvolts are led to a high-gain amplifier and enlarged to a size where the waves are easily visualized. Comparative studies of the graphs obtained from various brain areas indicate and localize the presence of abnormalities, if any exist.

Quite naturally for such a sensitively adjusted instrument, measuring minute voltages, details

of resistor construction are of vital importance in addition to the inherent stability, precision, low noise level and other characteristics which

ANOTHER *IRC* DEVELOPMENT

are fundamental requirements. *IRC* is proud to have collaborated in the evolution of the Electroencephalograph and to have had its resistors and specialized engineering skill play a part in its development.

*If you are seeking unbiased counsel on a resistance problem, consult *IRC*—the company that makes resistor units of more types, in more shapes, for more applications than any other manufacturer in the world.*



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Bausch & Lomb Contour Measuring Projector

Today Precision Must Be Commonplace



American fighting men on our fighting fronts depend upon production line accuracy . . . for ten-

thousandths of an inch variation on the production line can mean the difference between a hit or a miss on the battleline.

The Bausch & Lomb Contour Measuring Projector makes such accuracy possible on the fastest moving production lines, because it takes many vital

inspection jobs "off the surface plate" and eliminates the tedious, time-consuming computations of the "sine bar." Inspections for accuracy become routine jobs.

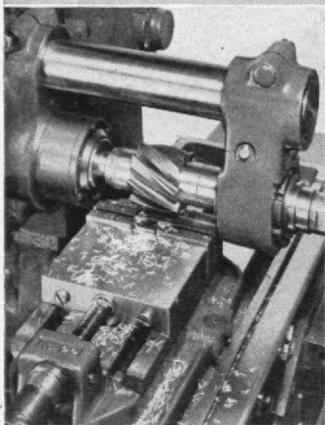
Throwing an accurate, sharply defined shadow image of the object under examination on a translucent screen, the B&L Contour Projector permits exact measurements or comparison with an enlarged template drawing at magnifications great enough for easy and accurate dimensioning.

Here again is a Bausch & Lomb peacetime development that serves America at War. The B&L Contour Measuring Projector is helping speed production of fighting tools for our fighting men.

For Bausch & Lomb Instruments essential to Victory—priorities govern delivery schedules.

BAUSCH & LOMB
OPTICAL CO. • ROCHESTER, N.Y.
ESTABLISHED 1853

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three seconds represents a
considerable percentage
increase on a short cut

The No. 000's accuracy of
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reversal allows close setting—
and the $\frac{3}{8}$ " minimum length of
cutting feed permits milling
short cuts **efficiently**.

On any job —

1—Locate the work so cut will be completed
just at point of table reversal

2—Set the table dog to bring the work up
close to the cutter at fast travel



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Make full use of the production
possibilities of the No. 000 Plain
Milling Machine for the rapid
milling of small parts on a wide
variety of materials.
Brown & Sharpe Mfg. Co.
Providence, R. I., U. S. A.

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IRON WORKS
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Shipbuilders and
Engineers

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THE TABULAR VIEW

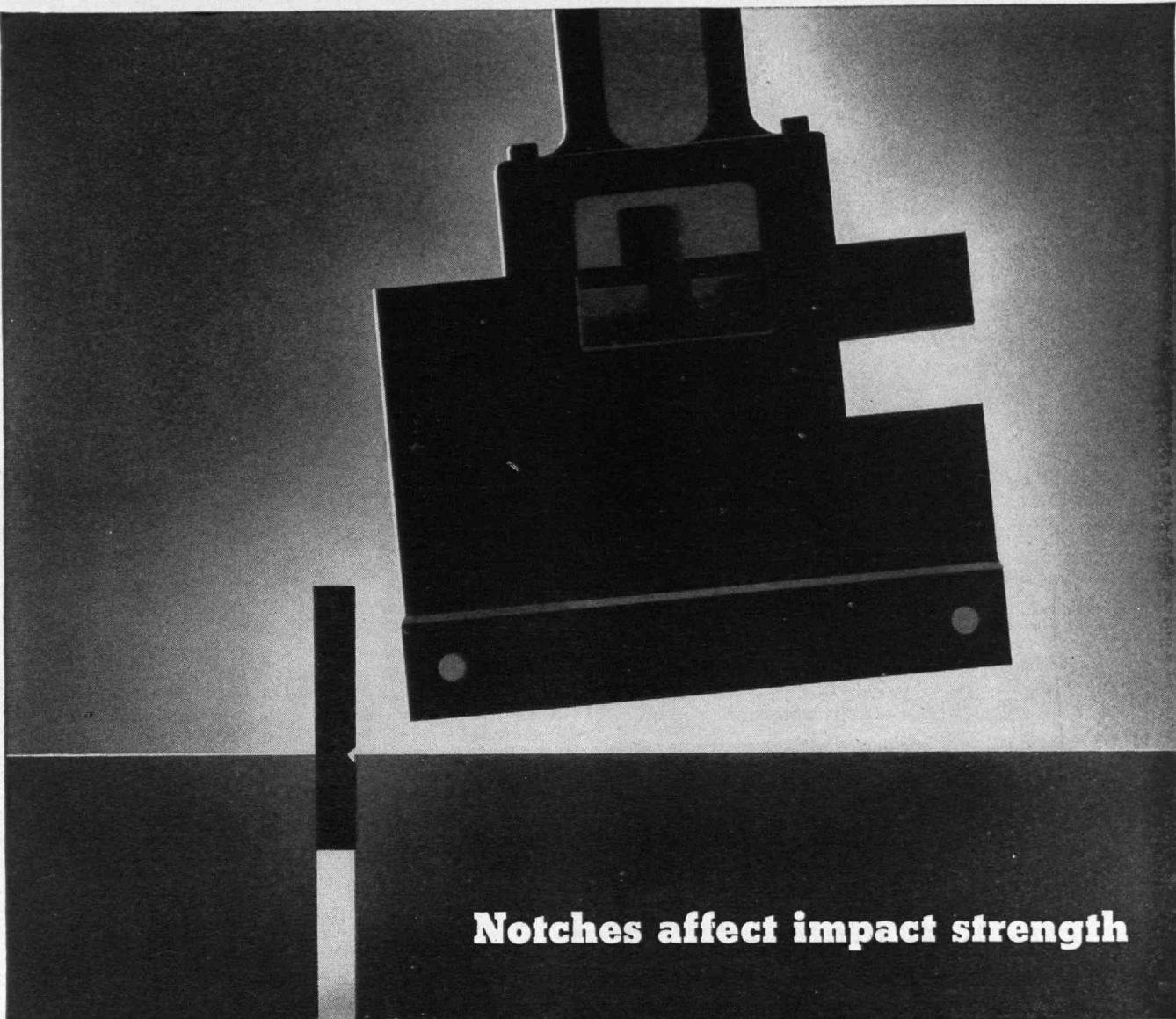
New Aims.— To rehabilitate a wounded soldier or an injured worker, we must do more than seek to offset the disability which occasions the effort; we must seek to awaken all his productive capacities. By so doing, we may bring to realization unsuspected powers, and we are sure to bring to being greater happiness. So argues L. MOHOLY-NAGY in an article (page 21) upholding new methods of training the teachers on whom the active responsibility for rehabilitation must rest. Director of the School of Design in Chicago, Dr. Moholy-Nagy, whom the *Saturday Evening Post* last summer declared "a modernist who is so far ahead that he is almost out of sight," worked as a young man with the famous Bauhaus group at Weimar. Painter, sculptor, and designer, he is a penetrating and vigorous thinker and a stout advocate of the great creative possibilities inherent in the materials and techniques of modern times.

Ocular.— His avocation of nature photography has kept HENRY B. KANE, '24, seeking out creatures "for to see and for to admire" in many sets of conditions. In this Review (page 24), Mr. Kane — without speculating on whether the creatures admire — addresses himself to how they see. His essay relies on the able photography and interestingly lucid prose that have made his series of books, the "Wild World Tales," notable among direct treatments of nature subjects.

Essence.— The history of the pin-tumbler cylinder lock — indiscriminately known by the name of the inventor as the Yale lock — is interesting in its informative sweep through American industrial history and in its stimulating glance back into remote times. As SIGFRIED GIEDION presents the story (page 27), it is seen to be of far deeper significance. The ingenuity and ability which Linus Yale, Jr., expressed in his development of the ubiquitous device without which many of our accustomed patterns of living would be impossible found their expression in undertakings which Dr. Giedion explains as characteristically American — undertakings concerned with the mechanizing of complicated rather than simple crafts, and in this distinct from comparable European developments. Himself trained as an engineer in his native Switzerland, Dr. Giedion became a historian and through his teacher Heinrich Wölfflin, is in the tradition of Jakob Burckhardt, the pioneer in the integral historical treatment of a period. Dr. Giedion's distinguished Charles Eliot Norton lectures at Harvard in 1938-1939 were the basis for his volume *Space, Time and Architecture*, already a landmark among studies of the history of culture. Secretary of the International Congress of Modern Architecture, Dr. Giedion is now engaged in studies for a new book, to be issued by the Oxford University Press, treating of the influence of mechanization on our life. From these studies the material of his essay on Yale and the lock is drawn.

Spiritual Football.— Physicist with the Byrd Antarctic Expedition in 1933-1934 and later professor of physics in the University of Alaska, E. H. BRAMHALL, '27, literally knows both ends of the earth. For The Review, however, he goes beyond those limits to write (page 32) of the aurora borealis, whose mystery still spurs study even as study approaches an explanation. Dr. Bramhall, at present with the Department of Terrestrial Magnetism of the Carnegie Institution of Washington, looks forward to a glass-domed igloo and further observation of far northern skies.

Mighty Mold.— Penicillin, widely in the news because of its power as a therapeutic agent in numerous diseases, is discussed for The Review (page 17) by M. F. ASHLEY MONTAGU, associate professor of anatomy, the Hahnemann Medical College and Hospital of Philadelphia, whose paper on the structure of the human skull was a feature of our issue for July.



Notches affect impact strength

Information supplied by an Industrial Publication

The effect of fillet radius on the life of machine parts operating under alternating stress has been known for a long time. The knowledge has been put to good use in designing parts so as to avoid fatigue failures.

The effect of variation in the notch radius of Izod impact bars has shown the way towards the elimination of impact failures in filleted parts.

Two sets of standard size impact bars were

machined from one heat of steel, both with a 45° notch. In one set the notch radius was 0.01 inch and in the other 0.05 inch. After quenching, and in some cases tempering, the bars with 0.05 inch radius consistently showed about 140% improvement in impact strength.

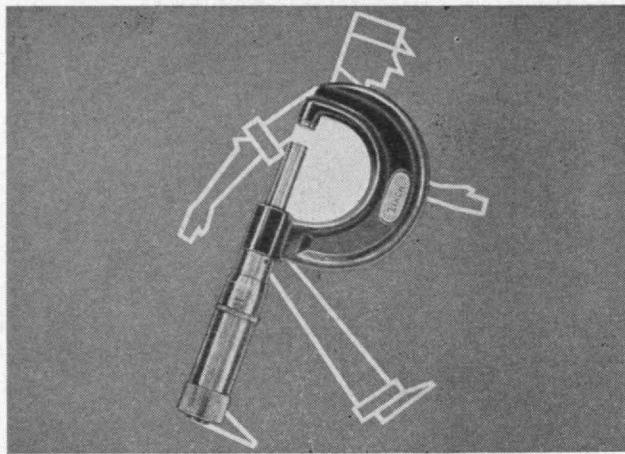
The practical application of these results, which consisted of increasing the existing fillet radius, has eliminated impact failures in a part where the problem had become serious.

CLIMAX FURNISHES AUTHORITATIVE ENGINEERING DATA ON MOLYBDENUM APPLICATIONS.



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by Samuel L. Hoyt

Here for the first time, a vast amount of scattered metallurgical data has been assembled in one volume. It contains 340 tables of critically evaluated data on wrought and cast steels, stainless steels, cast irons, heat- and corrosion-resistant casting alloys, aluminum, copper, nickel, and tungsten alloys and rare metals. Gives the most important information on all the important properties of these metals and alloys, such as tensile strength, hardness, thermal expansion, creep strength, high temperature behavior, work-hardening, endurance limit, and yield strength. The most complete, practical, and informative book of its kind ever published!

350 Pages

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330 West 42nd Street New York 18, N. Y.

MAIL RETURNS

The Wright Flyer

FROM LESTER D. GARDNER, '98:

Seeing the picture of the airplane used by the Wright brothers on December 17, 1903, which you printed in the July issue of The Review, recalled how it happened to be exhibited at the opening of the Institute's Cambridge buildings in 1916. Several of us who were then interested in aviation were asked to secure interesting historical exhibits for the dedication. I thought that it would be of interest if the first machine to make a successful powered flight with a pilot could be secured. I did not know then that the machine had never been assembled since its memorable flight and had been through two Dayton floods.

Edward M. Hagar, '93, had just become president of the Wright-Martin Company and immediately became interested. He requested Orville Wright to loan the machine for the exhibition and asked A. Roy Knabenshue, the pioneer airship pilot, who was one of Wright's assistants, to go to Dayton and assist Mr. Wright in reassembling the *Wright Flyer*, as it was called. The first reports that we received were discouraging, as parts of the machine were damaged and much of the fabric was in poor condition.

This great relic of American inventive genius had been undisturbed for 13 years. By continuous work, Mr. Wright and his assistants had the machine restored to its original condition in time to let it be seen by the public for the first time at M.I.T. Mr. Wright attended the dedication ceremonies and was guest of honor at a small dinner at which many well-known aeronautical specialists were present. At that time M.I.T. was giving the only complete course in aeronautical engineering in this country. Jerome C. Hunsaker, '12, was then in charge of it.

The *Wright Flyer* was shown at one or two exhibitions after 1916 and was later loaned to the South Kensington Museum in London. New York, N. Y.

— STEEL —

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WALLACE BLANCHARD, '16, Treasurer

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Sound construction, speed, economy — have made 100% of our present contracts repeat orders. Something to remember when you need a new building.

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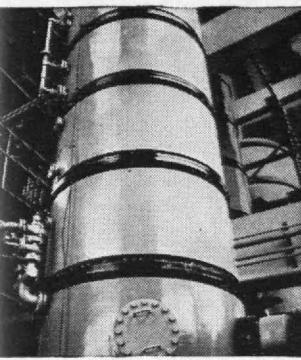
101 PARK AVENUE, NEW YORK

INDUSTRIAL CONSTRUCTION

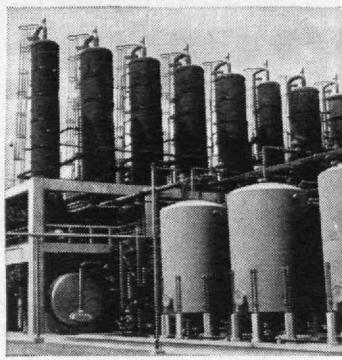
Alfred T. Glassett, '20, Vice President

TEN YEARS' WORK IN TWO

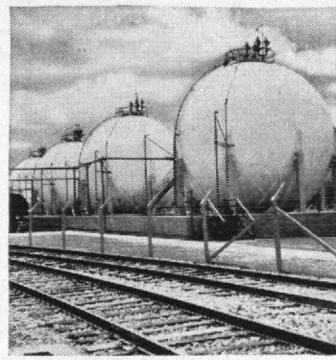
is the story behind Butadiene and Styrene for Synthetic Rubber



Distillation Column
for Styrene



Where Distillation Columns separate
and purify the Butadiene



Butadiene Storage Spheres

CONSTRUCTION RECORD AT INSTITUTE

June 25, 1941



Carbide and Carbon submits definite production estimates.

July 31, 1941



Design work starts on 10,000-ton-a-year butadiene unit.

Aug. 22, 1941



Government authorizes construction.

Dec. 7, 1941



Pearl Harbor

Dec. 15, 1941



Design "frozen" for 20,000-ton-a-year alcohol-to-butadiene plant.

March, 1942



Japanese occupy Malay Peninsula and Dutch East Indies; cut off about 90 per cent of U.S. natural rubber supply.

April, 1942



Construction on the first of four 20,000-ton-a-year butadiene units starts at Institute, W. Va.

July, 1942



Construction of 25,000-ton-a-year styrene plant starts.

Sept. 10, 1942



Rubber Survey (Baruch) Committee report accepted.

Jan. 29, 1943



First large-scale, alcohol-to-butadiene unit goes into operation two months ahead of schedule.

April 7, 1943



First styrene unit begins operation.

May 25, 1943



Fourth 20,000-ton-a-year butadiene unit begins operation at Institute plant.

August, 1943



Four 20,000-ton-a-year butadiene units producing at rate of 120,000 tons a year—50% over rated capacity.

WE WISH YOU could see the first of the Government's large integrated synthetic rubber projects, complete at one location. What you see here is a night scene and some daytime views of the immense butadiene and styrene plants that CARBIDE AND CARBON CHEMICALS CORPORATION, a Unit of UCC, has designed and built at Institute, West Virginia, for the Government's Defense Plant Corporation and is operating for the Rubber Reserve Company.

Carbide and Carbon also has completed another butadiene plant at Louisville, Kentucky—and has released plans to Koppers United Company for a third butadiene plant near Pittsburgh, Pennsylvania.

Butadiene had never been manufactured in the United States in large quantities before the plants at Institute went into production. The task involved in providing the mass production facilities the Government asked for was an unusual one...but one that took full advantage of the experience and processes developed by Carbide and Carbon.

Generally, it requires seven to ten years for a company to take a process developed in the laboratory, put that process to test in a pilot plant, iron out production problems, design a full-size plant, and then actually build the

plant and go into mass production.

By working at top speed for twenty months—Carbide and Carbon telescoped research, development, engineering, and construction work that would have taken 10 years in normal times. In this short time laboratory research was translated through chemical engineering into larger and more modern facilities for producing the chemicals for synthetic rubber than existed anywhere else in the world.

This achievement could never have been possible had it not been for the years of research and experimentation which, prior to the emergency, Carbide and Carbon had devoted to the production of synthetic—or man-made—chemicals of the organic series.

Business men, technicians, teachers, and others are invited to send for the book "Butadiene and Styrene for Buna S Synthetic Rubber from Grain Alcohol" which explains what these plants do, and what their place is in the Government's rubber program.

BUTADIENE, (bew-ta-dy-een). A highly volatile liquid which is the principal chemical in the manufacture of Buna synthetic rubbers.

STYRENE, (sty-reen). A liquid, like benzene, but having the property of reacting within itself to form a solid, clear, plastic mass. It is used as one of the principal ingredients of Buna S synthetic rubber.

BUY UNITED STATES WAR BONDS AND STAMPS

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30 East 42nd Street  New York 17, N. Y.

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CHEMICALS
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Corporation

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AN EXPRESSION OF FAITH IN AMERICA

RECENTLY, Goodyear dedicated a new home for its bold and manifold research activities, now concentrated on war products.

Gathered here, in vast array, are the most modern instruments of scientific discovery—not only in the fields of natural rubber, synthetic rubber and its kindred plastics—but in fields also ranging even to aerodynamics and metallurgy.

More than a million dollars went into this building and its equipment. It is, we believe, the finest laboratory for its purpose in the world.

But it is not the completion of the structure which we emphasize here.

It is rather the beginning of a new advance—an advance already launched by the limitless demands of war, which will surely gain momentum with the peace to come.

For Goodyear's growth has stemmed not from the accumulation of properties or from finance—but from fertility of the mind and the serviceability of the prod-

ucts which this fertility brought forth.

From the beginning Goodyear has steadfastly stressed research to advance the usefulness and value of its products.

It was this constant quest for improvement which, in the early days, originated the first straight-side tire.

It brought forth the first pneumatic tire for trucks and farm tractors—the first low pressure tire for airplanes.

It brought cotton, rayon and nylon cord tires to their high perfection.

It produced Pliofilm and Airfoam, twin advances in packaging and cushioning.

It developed the never-equalled Compass transmission belt.

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We cannot predict what this laboratory will bring forth in future.

But in the realm of possibilities—from the developments spurred by war—is such a range of products as nailable glass, wafer-thin insulating materials, hundred-mile conveyor belt systems, non-freezable plastic water pipes, metal-wood laminations for car and airplane bodies, mildewproof tents and awnings, static-free radio, all-welded airplane fabrication, crashproof airplane fuel tanks, and many like wonders on which we are now at work.

These will dictate in significant measure "the shape of things to come," forecasting the fullness of life which is ours to conceive and realize when peace returns.

So what we have dedicated is not a building, but the talents which this building is built to serve.

It is our aim to make it forever true of Goodyear, as of life in America, that "the best is yet to come."

Pliofilm, Airfoam, Compass—T. M.'s The Goodyear Tire & Rubber Company

GOOD YEAR

THE GREATEST NAME IN RUBBER

THE TECHNOLOGY REVIEW

TITLE REGISTERED U. S. PATENT OFFICE

EDITED

AT THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

*J. M. Rosse, '40*

Roofs and stacks in San Antonio, Texas

CONTENTS for NOVEMBER, 1943

THE COVER — CRAFTSMANSHIP: THE LOCK

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CONVERGENCE	FRONTISPICE 16
POTENT PENICILLIN	BY M. F. ASHLEY MONTAGU 17
BETTER THAN BEFORE <i>Proposal Is Made for a Program of Rehabilitation</i>	BY L. MOHOLY-NAGY 21
EYES TO SEE WITH <i>An Excursion from Crayfish to Carlyle</i>	BY HENRY B. KANE 24
A COMPLICATED CRAFT IS MECHANIZED <i>Development of the Pin-Tumbler Cylinder Lock by Linus Yale, Jr.</i>	BY SIGFRIED GIEDION 27
GOATS, BRANDS, AND THEORIES <i>The Aurora Borealis Impels the Search for Knowledge</i>	BY E. H. BRAMHALL 32
☆ ☆ ☆	
THE TABULAR VIEW <i>Contributors and Contributions</i>	10
MAIL RETURNS <i>Letters from Review Readers</i>	12
THE TREND OF AFFAIRS <i>News of Science and Engineering</i>	17
THE INSTITUTE GAZETTE <i>Relating to the Massachusetts Institute of Technology</i>	34

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Fritz Goro from Black Star

CONVERGENCE

An inner court of the Mellon Institute in Pittsburgh

THE TECHNOLOGY REVIEW



Vol. 46, No. 1

November, 1943

The Trend of Affairs

Potent Penicillin

By M. F. ASHLEY MONTAGU

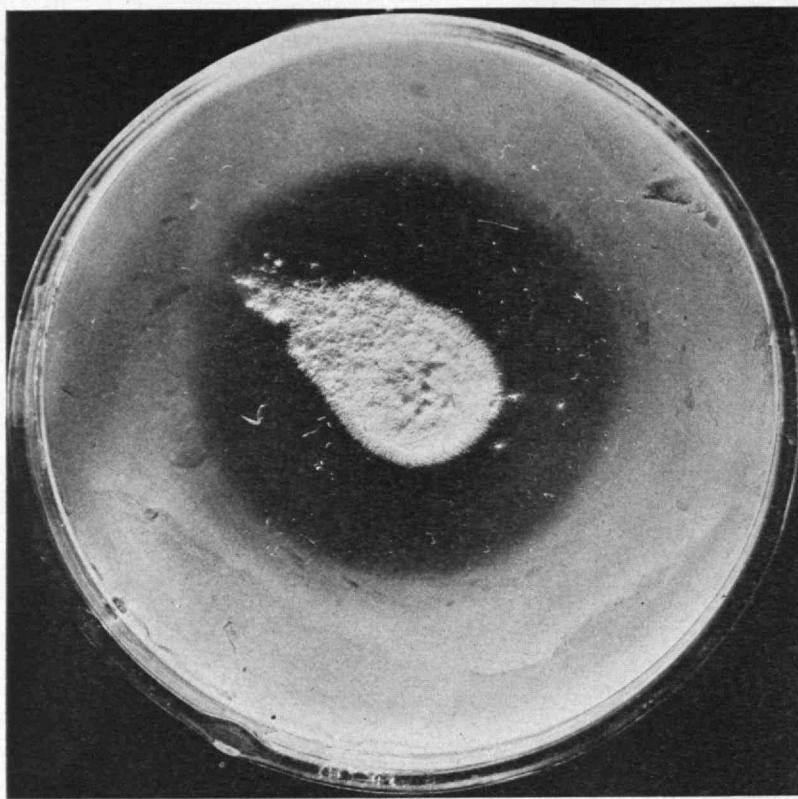
IN 1929, the English bacteriologist Alexander Fleming noticed that around a large colony of a mold contaminating a plate seeded with staphylococcus colonies, the staphylococci became transparent and were obviously being rapidly dissolved. Fleming identified the mold as *Penicillium*, closely related to the same mold which one sees on bread or in cheese, and later he placed it as belonging to the species *notatum* — *Penicillium notatum*. Investigating its bactericidal qualities, he found that these were considerable and that the inhibitory substance which prevented the further growth of bacteria possessed an extremely low degree of toxicity. This substance he named "penicillin" (pronounced "pennysillin"). Since the appearance of his original paper, Fleming has published nearly a dozen others describing the various remarkable properties of penicillin. But almost 11 years elapsed after the publication of his original paper before the therapeutic properties of penicillin were investigated, for not until 1940 did E. Chain and his six co-workers at Oxford report on the striking therapeutic properties of the new agent.

Since then, about 100 reports have appeared, and they are sufficient to prove that in many ways the new drug is one of the most important chemotherapeutic agents ever discovered. It has not proved to be that universal destroyer of micro-organisms of which Ehrlich dreamed; but for those micro-organisms for which it has thus far proved specific, it has demonstrated a destructive capacity greater than that of any other previously known therapeutic agent. In this, and in many other respects, it is far superior to the sulpha group of drugs, for it works more speedily, produces none of their ill effects, and possesses a very low degree of toxicity. A number of diseases which resist treatment by the sulpha drugs yield with amazing rapidity to penicillin. For example, while the

sulpha drugs first demonstrated their usefulness in certain types of pneumonia, other types were resistant to sulphonamide action. Penicillin not only is vastly more effective in the treatment of those pneumonias with which the sulphonamides previously demonstrated their action but also is successful in the treatment of the sulphonamide-resistant pneumonias. Thus recent experiments on various strains of pneumococci resistant to sulphonamide action, in mice-protection tests, have shown that these micro-organisms were completely susceptible to penicillin. In all experiments with penicillin, the survival rate among animals infected with every type of pneumococcal strain was strikingly higher than among those tested with sulpha drugs.

The report on the therapeutic effects of penicillin which the division of medical sciences of the National Research Council issued in August shows that the pneumococcus in man is extremely sensitive to the effects of the new drug, recovery being made by 80 per cent of the patients treated with it who were suffering from pneumococcal pneumonia. In two cases of pneumococcal infection of the pleural cavities — the spaces in the chest in which the lungs are situated — complete recovery was attained. In other forms of pneumococcal infections, such as meningitis and endocarditis, or inflammation of the lining membrane of the heart, the results were not so good, though with earlier treatment of all cases it is probable that the results would have been better.

Penicillin will kill certain bacteria, such as *Staphylococcus aureus*, which gives rise to conditions such as boils, carbuncles, abscesses, and highly fatal forms of meningitis, osteomyelitis, mastitis, and so on. For these conditions, particularly where pus formation was advanced, no satisfactory remedy was previously available. Eighty-five per cent of patients with such infections formerly died. The National Research Council report shows that by the use of penicillin, the death rate in these conditions has been reduced by more than half and that the use of this agent in early stages of the infection should save



Fritz Goro from Black Star

The action of penicillin is vividly shown in this culture dish. The mold patch, *Penicillium notatum*, at the center of the dish has excreted penicillin, which has killed off much of the *Staphylococcus aureus* surrounding it. The gray areas are occupied by staphylococcus colonies; the clear halo surrounding the mold has been freed of them.

the majority of patients. Thus the report shows that recoveries were recorded for 90 per cent of patients suffering from general sepsis and 100 per cent of those with infections of skin and subcutaneous tissues. In such serious diseases as osteomyelitis, in which the bone marrow becomes greatly inflamed and for which the outlook has hitherto been almost hopeless, treatment with penicillin has effected notable results in over 80 per cent of cases treated.

In women suffering from septicemia following abortion or childbirth, dramatic cures have been attained with the use of penicillin. There can be little doubt that several of these patients would otherwise have died. It is highly probable that with further experience, the new agent will prove to be the long-sought-for means of saving the lives of untold numbers of women who have fallen victim to septicemia following misadventures in the process of pregnancy.

For serious acute and chronic infections of the eye, for numerous skin infections, and for chronic wound sinus, the local application of penicillin has effected cures when all other attempted means have failed. In the treatment of acne, burns, the common cold, ear infections, and a number of other conditions, it yields excellent results. We already know, however, that for some diseases, like typhoid and bacterial endocarditis, penicillin is without effect. There are probably a number of other conditions in which it will prove to be ineffectual.

Owing to the fact that penicillin is very rapidly excreted in the urine (from which it is fortunately very easily recoverable), the patient must be given repeated doses of it at intervals of three or four hours. Since it

has no effect when taken orally, it is usually given by intravenous or by intramuscular injection. For surface conditions, such as wounds or bones, it is applied topically in the form of a salve or solution, but not in the form of a powder, since in powder form it appears to have an irritating effect. The fact that penicillin passes through the urinary tract so rapidly should make it invaluable in the treatment of infections of the urinary tract caused by susceptible organisms.

The most recent reports on the effects of the drug on the worst types of gonorrhea confirm this expectation, for the National Research Council report shows that in those gonorrhoeas which are resistant to the sulphonamides and in cases in which the infection has been of long standing, all symptoms of the disease disappear within from 9 to 48 hours after injection of penicillin. A total of 129 cases were treated, of which 125 were free from all symptoms within the period named. As the report states, "Here, then, is a most potent weapon in the treatment of sulfonamide resistant gonorrhea, and it is not too much to predict that penicillin will prove to be one of the most effective agents in the treatment of a disease that causes great ineffectiveness in the armed forces and in the civilian population."

As an ally in the war, penicillin is already playing an effective part. For the treatment of war wounds of all sorts, it is about 10 times more effective than sulphathiazole as an antibacterial agent, according to the investigations of its discoverer, Alexander Fleming. At the present time, extensive studies of the use of penicillin in wounds, as well as in other conditions, are under way in a number of Army and Navy hospitals, and many more studies are being planned as soon as greater supplies of the substance become available. In September about 20 firms were already engaged or planning to engage in the manufacture of it.

The growth of the mold *Penicillium notatum* and the preparation of penicillin in any quantity from it require much space, much material, and many skilled workers. Because the mold grows so slowly and because comparatively few firms have been engaged in the manufacture of it, little penicillin is now available. In fact, at the present time the cost of treating a single patient is very considerable. At the moment the United States Government is taking for use in the armed forces almost the whole of that which is being manufactured. To the civilian, except in special cases, penicillin is not now available.

The mold from which it is derived looks very much like the blue-green mold which grows on bread; is, in fact, often identical with bread mold as it is with the mold which grows in camembert and roquefort cheese, *Penicillium camemberti* and *Penicillium roquefortii*. Penicillin itself is obtained as a free acid or an ammonium salt by chemical processing of the medium in which the mold is grown.

Little is at present known concerning the mechanism by which penicillin acts upon bacteria, but the evidence indicates that it acts both as a bacteriostatic and as a bactericide. In its former capacity, it is known to prevent

the growth of bacteria by inhibiting their capacity to multiply; bacteria in the presence of penicillin do not undergo fission. In its second capacity, penicillin is presumed to produce an actual killing effect, but the mechanism of this presumed bactericidal effect is at present unknown. Very probably, if this lethal action occurs at all, it is a dissolving of the membranes of the offending bacteria, causing their death from dissolution, or lysis.

Electronics and Ecclesiastes

WITH printers and publishers agog in their trade journals about hundred-thousand editions of average books mass produced to sell for a quarter once war's demands have been relaxed, new force is added to the dour remark of the Preacher, "Of making many books there is no end; and much study is weariness of the flesh." Plastic plates reducing the weight which presses must handle, ink-drying devices permitting even greater speeds of production, photocomposing processes facilitating offset printing by eliminating the essentially letter-press function of typesetting now intermediate in it—these are among the technological aids which are looked to by the printers and which The Review has from time to time noted. The facile electronic tube is in the news now as photoelectric control for the immediate and automatic correction of faulty register in multicolor printing is going into wider use. Two phototubes, one scanning light transmitted from a slotted disk at the end of the press cylinder and the other scanning matching register marks on the paper, co-operate to keep paper and cylinder in proper relation. Photoelectric control of the trimming of the finished product is a similar function foreseen as effective and desirable.

A vast mass of new knowledge awaits dissemination and interpretation once wartime restrictions can be slackened. Multifold problems of economics, politics, and peace must be formulated and explored. There will be work enough for the press, no matter how fast technology enables it to roll. But since a book must remain an intellectual and spiritual commodity however much the manufacture of it as a physical unit is speeded up, unprecedented demands must be expected by typographers and designers whose is the work of insuring to each volume the format and typographic design most consonant with its intellectual values. Properly done, this work is of inestimable worth to author and reader alike. Properly done, it relieves a bit the weariness of the flesh which Ecclesiastes deplored. Dealing as it must with intangibles, it is an exacting task.

Why penicillin is as yet scarce: the many gallon bottles of mold required to produce 37 ampoules of the drug, the approximate amount necessary for one treatment.

For this reason, and for the urgent reason implicit in the technological advances toward mass production which have been suggested, *Paragraphs on Printing*¹ is not only a charming but also a decidedly important book. It consists, the title page recites, of material "elicited from Bruce Rogers in talks with James Hendrickson on the functions of the book designer." Thus it presents the dean of American typographers speaking informally, directly, and practically about the varied phases of his work, and emphasizing precept with illustration as needed. It is a specialist's book which any generalist will enjoy and which will be a powerful catalyst for the turbulent compound of postwar publishing.

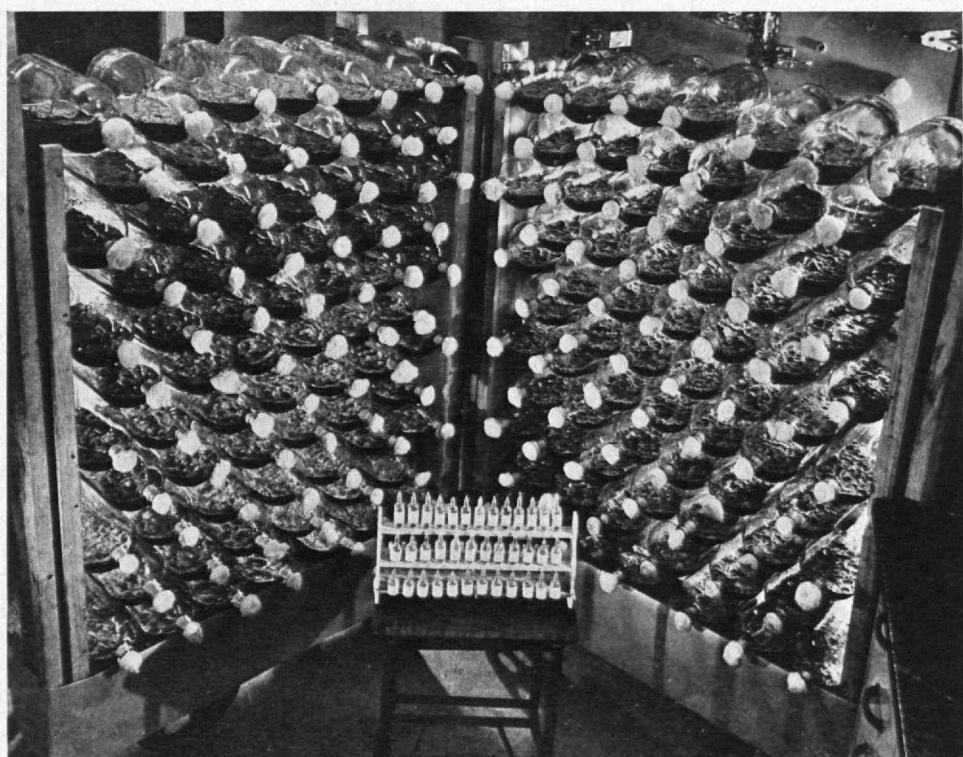
Textiles and the Time Factor

OF the three characteristics which combine to make textile materials unique—strength, lightness, and flexibility—the third has not been accorded the importance it deserves in textile testing. This characteristic, which makes it possible to form fibers into yarn at all, is of basic importance to manufacturer and user alike. Coherent studies of it therefore demand our attention, and the phenomena of the ordinary tensile, or stretching, test take on more than usual interest.

Watching such a test on a filament of silk, wool, rayon, or nylon, the observer is no more surprised at seeing the filament stretch as load is increased than at seeing a rubber band snap back after it has been pulled. Yet explanation of these things will occasion him more than a little trouble. And that explanation is fundamental to understanding of the flexibility which permits yarns to be spun or felts to be compacted.

Suppose, for a general example, that a fiber fastened securely at one end is loaded at the other with a weight which it can carry without breaking. Three things happen: First, an instantaneous extension occurs—an elastic

¹ New York: William E. Rudge's Sons, 1943. x + 188 pages. \$10.



Fritz Goro from Black Star

stretch. Second, a slower extension takes place, decreasing in rate as time goes on, eventually becoming extremely slow. Third, what? How the third happens cannot at present be known, and whether it has happened at all can be determined only after the load has been removed. Removal of the load occasions three happenings: (1) There is an instantaneous and complete recovery of stretch equal to the initial instantaneous extension. (2) Further recovery takes place at a slower and slower rate. (3) Under certain conditions which are frequently met, this slow recovery stops before all of the slow earlier extension has been regained; when slow recovery is thus not complete and the specimen is "set" at a length greater than the original, the third phenomenon of extension did take place. This remaining unrecovered extension, which is nonrecoverable unless the conditions of the test are changed (temperature or moisture, for example), is known as "secondary creep." In such an instance, the slow extension under load is seen to be made up of two components: primary creep, which is recoverable; and secondary creep, which is not.

The relative magnitude of elastic stretch, primary creep, and secondary creep is evidently important as governing the stretch and contraction behavior, and hence the strength and flexibility, of fibers, yarns, and fabrics. Most textile fibers differ markedly from glass or metal in that the elasticity of the fibers is usually much less in magnitude than is their creep. Consequently, since creep and creep recovery are very much matters of time, textiles must be considered and tested by techniques which include the time factor.

Detailing the results of a program of research in the division of textile technology at the Institute, a volume recently published by the Textile Foundation, Inc.,¹ lays a foundation for the closer relationship of physical, optical, and chemical research to the deformation behavior of fibers and plastics. It demonstrates how simple physical tests can provide invaluable information on the ultimate chemical and physical constitution of such materials. As Harold deWitt Smith says in his foreword, "Time is the principal character in this book."

Dr. Leaderman shows that unless a sufficient time is allowed for the fiber to reach equilibrium, either of deformation or of recovery at the changed load, no real understanding of the action of textile materials is possible. Even those testing machines which attempt more or less successfully to apply the load at a constant rate still produce graphic records of deformation against load which take the form of "hysteresis loops." Numerous investigators have made these loops the basis for discussion of the relative behavior of many filaments under load. Few have recognized that the shape and placement of the loops are largely influenced by the time factor, rather than by the material itself, and can be greatly altered simply through allowing more or less time to elapse between successive points on the curve.

Just how the time factor operates to create what seems to be a "memory" in a fiber is an important consideration. A fiber seems to be able to recollect its previous stress-strain history, and to condition its further response to such stimulus in terms of its past experience. How this complex reaction may be predicted, eliminated, or con-

trolled is indicated by Dr. Leaderman through mathematical discussion and analysis of analogues composed of springs and dashpots in various combinations and with various distributions of relaxation time, or composed of electrical circuits made up of combinations of resistances and capacitances. He points out the similarity between the behavior of a condenser in building up and dissipating its charge with variations of current and the behavior of a filament or plastic in its relaxation of stress or recovery of deformation after change or reversal of load.

Whether the filament is vegetable or animal (as in cotton or wool) or muscle fiber (living or dead), similar laws appear to hold as far as deformation under load and upon relaxation of load is concerned. Here is a fruitful method of attack upon the nature and structure of the multitude of high polymeric materials which nature provides or which man manufactures. It is groundwork upon which a generation whose development and future may well hinge on the scientific and economic impact of plastics can build. Research such as this provides yet another link to bind physics, chemistry, optics, and even biology ever closer.

Mulada

SHORT bits of common spaghetti are thrust through the fine wire coils used in the filaments of radio tubes, to support them in accurate alignment as they are welded in place. Subsequently burned away by electricity sent through the coil, spaghetti is reported to save three-quarters of the time formerly necessary for the assembling of a filament. ¶ Unable to clothe their soldiers in silk, the only clothing textile fiber abundantly available to them, the Japanese are turning to hemp as a substitute for the wool and cotton which are desperately short. Cut into small pieces and treated with caustic soda, the hemp is mixed with about 20 per cent of paper pulp and run through a thread-twisting machine which is claimed by the Japanese to produce a strong thread suitable for weaving. ¶ Plug, ring, snap, and other gauges made of specially constituted glass which compares in important characteristics with alloy steels are coming more and more to be a significant result of wartime efforts to conserve critical materials. Before the war, glass gauges had been used successfully in various foreign countries; American glass manufacturers have with equal effectiveness met the opportunity provided by research instituted by the Ordnance Department of the United States Army. Molded glass blanks of different sizes and types now available to manufacturers of gauges offer physical characteristics held to exacting specifications. Grinding and lapping operations have similarly been developed to take full advantage of the possibilities of the material. ¶ What rough roads do to automobile tires is suggested by findings in tests run more than 10 years ago and recently brought back to public note as rubber's preciousness increases. A bus tire carrying a normal load of 6,000 pounds suffered impact forces ranging from 14,000 to 19,000 pounds when it ran off a ramp an inch and a half high. Maximum impact occurred when the bus was traveling at 30 miles an hour. Running off the ramp was equivalent to running into a chuckhole an inch and a half deep. Climbing out of the chuckhole was simulated when the bus struck an obstruction an inch and a half in height. This produced a shock impact of 10,000 to 21,000 pounds.

¹ *Elastic and Creep Properties of Filamentous Materials and Other High Polymers* by Herbert Leaderman, '38 (Washington, 1943), xii + 278 pages.

Better than Before

Proposal Is Made for a Program of Rehabilitation of Handicapped People by Techniques Involving Efforts to Employ All Capabilities of the Individual

BY L. MOHOLY-NAGY

REHABILITATION is a rather new term. Its content is not yet clear and even its definition needs crystallization. Generally, when we speak about rehabilitation we have five groups in mind: (1) the disabled or handicapped members of the armed forces of the present and the past World War; (2) servicemen discharged from Army camps because of breakdowns during training; (3) Army and Navy aviators withdrawn from the combat zone because of operational stresses; (4) psychopathic cases cared for in state and private hospitals; and last, but not least, (5) injured industrial workers.¹

But rehabilitation in the future should be understood on a larger scale than just the restoration or reconditioning of disabled persons in these groups. It must reckon also with those persons who now are considered normal but who in reality live on the border line of psychological and physical deficiencies. Of rejected selective service candidates, for instance, 23 per cent are turned back for neuropsychiatric reasons. The statistics in the Cook County jail in Chicago show that 50 per cent of the inmates are repeaters year after year. A constructive and all-inclusive rehabilitation certainly could cut down this figure. Experiences with prisoners, if known and studied by educators, could help to work out preventive measures against criminality. Cross-fertilization and exchange of experiences are badly needed.

In the Nineteenth Century the mental health of the people deteriorated as a consequence of rapid industrial development. The traditional emotional securities anchored in the mores, the religion, and the philosophy of the past gave way under the impact of new ideas and new social problems. As counteraction, great advances were made in medical and social research. They were, however, confined more to the curing of symptoms than to the clarification and elimination of causes. The industrial age, focusing its interest in exploitation of nature's wealth

and in production of goods, did not consider too thoroughly the biological, physiological, and psychological requirements of the individual, his need for a balanced program of work, recreation, and leisure. The psychological reverberation of this attitude is a chronic feeling of frustration among overstrained people in the daily routine — a growing number of neurotic cases. The new aims for rehabilitation have to take into account this general situation.

Rehabilitation has many different facets, but its main direction is to restore the patient to the level of his normal status. At present, the task is chiefly in the hands of occupational therapists. The history of occupational therapy goes back not more than a hundred years. It is a growing discipline, constantly searching for a better, more nearly adequate program to accomplish its fundamentally sound service in curative and diversional therapy. Social rehabilitation, however, is still burdened with the old sentimentality toward the "crippled." Moves in the direction of more constructive solutions are gaining ground rather slowly. The cultural lag between traditional thinking and the requirements of the industrial age often prevents the experts from envisioning for their patients proper forms of adaptation in the normal routine of contemporary life. Frequently, the patient is placed in an arts or crafts milieu with a short-term program that does not take cognizance of modern technological developments. In diversional therapy, "expression" is stimulated as entertainment for the sake of killing time. The best solution occurs when the handicapped is adapted to regular craftwork to continue after leaving the hospital.



Blind people testing tactile charts and hand sculptures at the School of Design in Chicago

¹ Since 1940, the rate of industrial accidents has been showing an increase because millions of new workers have been incorporated into the production of war goods. The total economic costs of occupational accidents in 1942 are estimated by the National Safety Council at \$2,300,000,000.

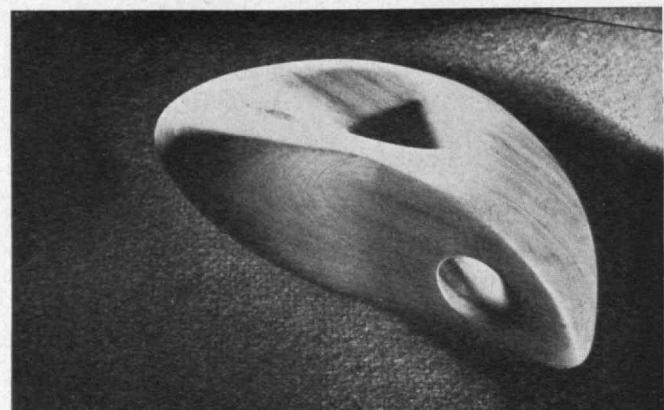
Because of the war, a state of urgency exists. Everyone feels a responsibility toward the men who risked their lives for their country. The pressure is great to find a satisfactory approach for the rehabilitation of the disabled serviceman. It is fortunate that this widespread interest in rehabilitation and the clarification of its problems will help to encompass all types of handicapped persons.

At present the Veterans Administration in Washington, D. C., is the focus of the rehabilitation of handicapped servicemen. Though its work is well conceived and conscientiously done, its occupational therapy — a kind of "repair therapy" during hospitalization — does not include planning for *vocational* rehabilitation which may follow hospitalization. The vocational planning is left to other agencies; the different therapies and vocational rehabilitation are not related to each other.

The scope as well as the difficulties of a health rehabilitation policy is shown in a recent English Parliament report, the lesson from which is that rehabilitation can be handled only with closest co-operation of the diversified governmental, industrial, and educational agencies.²

Industrial rehabilitation is even more fortuitous than the rehabilitation of the veterans. Too many companies which have a number of daily accidents have handled the reoccupation of the handicapped with a hit or miss policy, if with any policy at all. Fortunately, this charge is by no means all-inclusive. One large manufacturer, for example, has a policy of engaging handicapped workers, often 10 per cent of the company's total employees. In 1942, over 4,000 blind or deaf and over 7,000 otherwise disabled were employed in its factories. Without such official responsibility toward the mutilated, only the sympathy of foremen or supervisors can be called upon in the rehiring of these former workers. And even if they are rehired, they may be put to sorting bolts and screws for half their former wages, or may be offered inferior jobs regardless of their former qualifications. The labor shortage during the war has somewhat changed this situation, and it would be tragic if the disabled men should be forced in the postwar period to return to their former, rather sterile, substitute lives.

² Dorothy Liebes, the well-known textile designer from the West Coast, somewhat startled about the poor artwork of occupational therapy workshops, started in 1943 an art and craft program with the co-operation of the Red Cross. Artists and craftsmen are asked to volunteer six days in six weeks for diversional therapy with hospitalized sailors and soldiers. Though this work is very commendable, it is necessary to state that the "arts" designate only one phase in the manifold problems of occupational and other therapies.

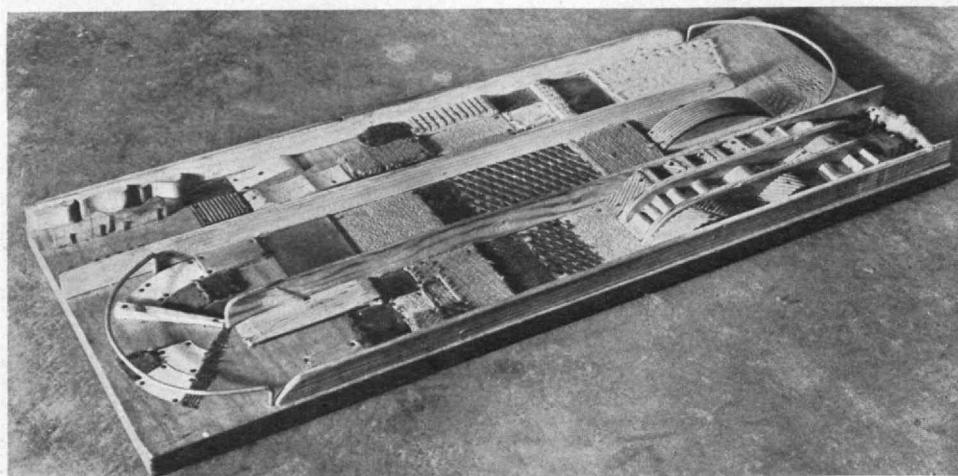


A hand sculpture — a form worked out in wood and given pleasant finish

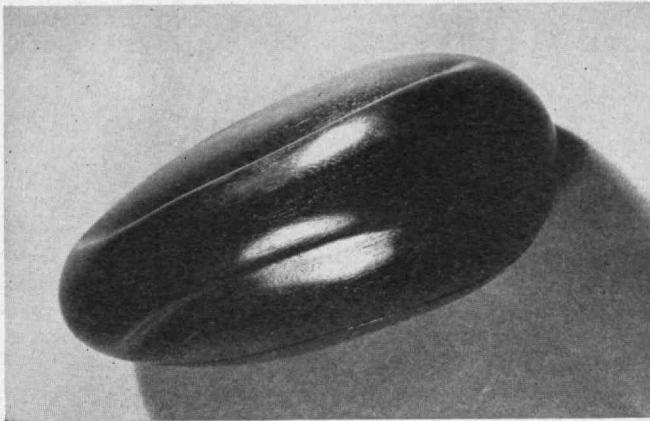
To survive an accident morally or economically required in the past all the will power and ingenuity of the handicapped, since he seldom had constructive advice from any source when hospitalization was over. Charity agencies have been of help. They often do excellent work, but they are usually functioning with relatively small budgets and can take care only of a limited number of physically handicapped people. Among these agencies are the Illinois Association for the Crippled, Milwaukee's Curative Work Shop, Manhattan's Federation of Crippled and Disabled, and the National Jewish Hospital at Denver.

What is really needed is a planned form of general and special rehabilitation, inclusive of the different categories and backed by the social security laws. In fact, there are well-worded plans of experts and bills passed by legislatures which provide educational possibilities for the handicapped veterans. The other groups require attention too, however, and we need an *adequate technique* for the realization of these aims; otherwise the best plans will remain paper projects. The psychological aftermath of this war and the social and physical effects of its machines and weapons can be overcome only by ingenious use of our resources.

New situations require new attitudes. A new plan for rehabilitation must be based upon *contemporary* thinking and practices, without traditional fixations. Rehabilitation must be taken out of the charity atmosphere so that it may become a constructive problem of education and re-education. Rehabilitation and, included in it, psychological, social, recreational, and occupational therapy



A tactile chart of the kind used in basic work in Moholy-Nagy's Chicago school. Consisting of wood, cardboard, sandpapers, textiles, rubber, wire meshes, felt, celluloid, paper, linoleum, nails, cotton wool, and so on, it offers many tactile contrasts.



Design for a telephone handset, executed in wood for production in plastic

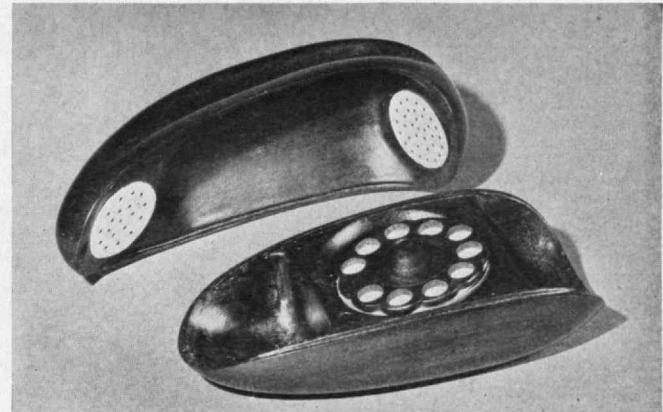
have to be more scientific and more intuitive at the same time. They must follow the lines of new developments in education, psychoanalysis, and scientific motion studies. There is a great need for investigation and experimentation in the biological and psychological fields. One of the important problems is to acquire fundamental knowledge about the nature of co-ordination of hand and brain as a possible departure for a balanced existence; about the role of sensory experiences and their applications in creative work; about hereditary and environmental influences; about the time distribution of work, recreation, and leisure most likely to result in individual deviations for the different temperaments.

The handicapped should be understood as having the same potential source of creative energies as is inherent in every human being. His best qualities must be considered and brought into the open in order that he may not only try to restore the standard of his previous state but attempt to rise beyond it to a higher efficiency and a higher productive level.

Can a handicapped person be better than he was before? This question, at the first moment, sounds paradoxical. Yet the patient, shaken to the core by his tragic experience and filled with the hope of overcoming it, may be stimulated to find a way for an enhanced creative action. In history we find persons from Demosthenes to Helen Keller whose achievements were miraculous. It is desirable that a public opinion be created to make the problem of rehabilitation appear solvable not necessarily in the light of such accomplishments but at least in the light of each individual's best achievement. Such opinion would then be instrumental in creating a normal standard out of what has previously appeared to be a rare effort.

The person handicapped as a result of accident, having been imbued with the idea that he may rise above his former capability, will orient himself toward such an accomplishment. Naturally, in practice, one should not hope for superhuman results. Often an intensified achievement will be satisfactory enough. But we cannot accomplish this by teaching the details of a single craft. The patient has to be stimulated by a well-rounded program in order that he may be activated to a full evaluation of his own situation. He could then attempt to strive for the new goal, which is to realize the maximum extent of his capacities in the industrial world.

The present educational system for even the non-handicapped is not suitable for this purpose. The average person has gone through the present educational system



The telephone opened, revealing transmitter, receiver, and dialing apparatus

without receiving the maximum training for the development of his personality and talents. Hence it is an obvious conclusion that, in comparison to the unaffected, the handicapped person has to have a doubly careful, intensified training.

Such a person must be trained in the use of all his faculties. In order for his buried energies to be released for contemporary orientation, he has to overcome his old habits, ideas, and judgments not any longer applicable to our age. Creative work and conscious personality development can overcome maladjustments or feelings of inferiority in the competitive and heterosexual relationships, and may open the way for free, efficient, and satisfactory activities.

A second requirement for the successful execution of this plan is to give the patient the conviction that it will be worth while to make strong efforts to overcome his shortcomings. There will be no discrimination or stigma against his physical or mental recovery process.

The new aim is the highest possible grade of practical rehabilitation, even if this means only a partial efficiency of the handicapped in the production process. This aim must be made known to the public so that the employment of handicapped people, even if only on a part-time basis, will become a general practice after the war.

If the goal should be generally accepted, its secondary results might lead to the solution of a difficult psychological situation connected with the problem of insurance compensation. Compensation, although it guarantees only a minimum existence for the handicapped, often leads to passivity. In destroying the initiative to return to normal life, this well-deserved compensation sometimes proves a disadvantage to the handicapped. Without invalidation of the practice of financial compensation, the new idea of constructive rehabilitation may be understood as a new social "reward," infinitely more valuable than the small monthly allowance paid by the insurance companies or by government and state agencies. This suggestion should not be interpreted as an attempt to relieve public and private agencies of their financial obligations toward the handicapped. It is meant only as an incentive toward the rehabilitation program that stresses not the mere earning of a livelihood as the final goal but reincorporation of the handicapped as a creative and responsible member into society.

Compensation causes other complications, too. Factories in normal times usually do not dare to hire handicapped people, as they are afraid (*Continued on page 42*)

Eyes to See With

An Excursion from Crayfish to Carlyle

BY HENRY B. KANE

THE human eye is a marvelously complex organ. Consider, for example, the retina — that sensitive screen upon which the image is formed. One of its four layers, the receptive layer, contains a close-packed mass of tubular bodies — 6,500,000 cones and some 125,000,000 rods. The eye, however, is only one part of the business of seeing, for seeing requires a brain to interpret the visual impulses. Some creatures with eyes just as complex as ours do not receive the same impressions, because their brains are lacking in certain respects. Fish come in this category. In the attempt to overcome the drawback of a simple brain, some rather involved optical systems have been developed, far more involved than our own.

Although the human eye no longer holds any very great mysteries, this condition is far from true of the sight organs of other forms of life. Partly for this reason, and partly because of the many different ways in which seeing has been achieved, the subject is an absorbing one. The adaptations of eyes to peculiar ways of living; their sharpened sensitivities along specialized lines; the development of supplementary sense organs to overcome visual deficiencies; and the widely divergent functioning of many optical systems which appear to be basically the same — these are only suggestions of the paths investigation follows.

FAR removed from the complexities of the vertebrate eye is that of the spider. Basically it is no different from the ocellus, which serves as a supplementary eye to most insects (the spider, of course, is not an insect). The image which the spider's eye transmits is undoubtedly coarse and indefinite. Clear vision is limited to objects nearer than six inches, although motion can be seen at a much greater distance.

In spite of what seems like a disadvantage, however, the spider has all the optical equipment he needs. The wolf spider, one of the hunters, has eight eyes arranged in three rows, the last pair being on top of his head. They give him essentially hemispheric vision. Hunting spiders are not web builders. They stalk their prey through the matted undergrowth of the grassy jungles. Horizons are limited under

that swaying roof. Far vision would be useless; in fact, it would probably be a hindrance. As it is, when some hapless insect drops to earth or crawls out from shelter, the motion is immediately transplanted to the hunter's brain and he rushes forward with unexpected speed. In the last six inches he recognizes the object; and if it is acceptable to him, two poison-tipped claws on strong, hairy fangs soon still its struggles.

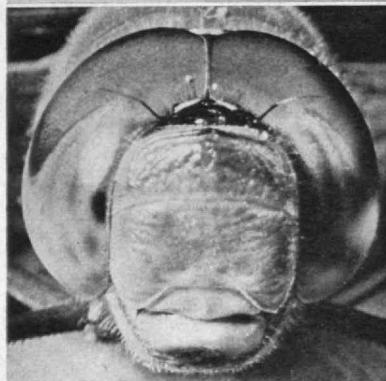
Most insects have compound eyes. Although the majority of species also have one to three simple eyes, or ocelli, their usefulness is in some doubt. Compound eyes are made up of a number of separate tubes terminating externally in facets. The number of tubes varies greatly, totaling as many as 30,000 in some dragonflies. Each tube is transparent and coated with a dark pigment which absorbs oblique rays of light, passing only those from directly ahead. The impression received is that of a single mosaic picture. Since they have no focusing device, insects see form no more than a few feet away, but they can distinguish motion at much greater distances, just as the spiders can.

As an example of how such a compound eye works, consider the dragonfly. His familiar erratic flight has a real purpose, for his food consists of insects, and he always catches them on the wing. He forms his six feet into an effective net into which they are scooped. As he darts along, a moving object crosses his sight. No matter what the angle may be, he senses that motion, for his all-encompassing eyes leave few blind spots. Instantly his direction changes and, as he swoops down, the image becomes clear in sufficient time to guide his future course.

Here, then, are two entirely different types of eye, the simple ocellus of the spider and the highly developed compound eye of the dragonfly, each conveying the same visual information.

A broad field of vision is essential for many creatures if they are to survive. Those whose continued existence depends upon their success in escaping enemies must be able to see those enemies from whatever quarter they may approach. To the predators, wide-angle vision means a reduction in lost motion, the elimination of hidden areas in which prospective meals may be concealed.

The visual field may be extended by a number of methods. In many vertebrates, the ability to turn the head answers the purpose. In spiders and dragonflies, a multiplicity of eyes or visual elements serves the same end. In some others, especially the crustaceans, the entire eye is on a movable stalk which can be turned in any given direction without other bodily movement. The crayfish is typical of this class. His eye is compound, built up in the same manner as that of the insects. As he walks along the pond bottom, his periscopelike eyes turn hopefully in all directions. A polliwog is searching along the sandy floor. The crayfish quickly trains his eyes upon it, and a pair of strong, toothed claws shoot out to grasp it with an unbreakable grip. A shadow moves through the waving weeds as a hungry



From the top, looking at you are a spider, a dragonfly, a frog, a crayfish.

snapping turtle approaches. With a flip of his tail, the crayfish shoots backward into the protecting shelter between two rocks and proceeds to devour his catch in safety. His eyes have served their purpose twice in as many minutes. Their broad vision has provided him with the information he needed for both food and safety.

The eye of a frog is essentially the same in structure as that of a human being. It is a typical complex vertebrate eye, differing internally only in detail but varying greatly in many other respects. The most obvious difference is in its location above the level of the head itself. The usefulness of this positioning is apparent when the frog has taken refuge in the water and rises to the surface once more to see whether the coast is clear. The only portions of his body which he needs to expose to possible lurking danger are his eyes and his nostrils, a relatively small area.

The frog's eye is completely retractable into the roof of his mouth. This ability to withdraw the eyes is of inestimable value as a safety feature. When he is swimming under water, for example, weeds, sticks, and other objects might otherwise easily damage his protruding eyes, since he has not a flexible neck to aid in dodging obstacles. Retractability of the eyes also helps greatly in swallowing. The frog's appetite is almost insatiable, and he often finds difficulty in swallowing some of the food he captures. The bulges which result in the roof of his mouth after he withdraws his eyes assist in pushing down an unwilling or overgrown captive.

Another of the frog's protective devices which has its counterpart in many creatures is the nictitating membrane, a third eyelid. Folded beneath the lower lid, this semitransparent membrane closes in order to moisten the eye or to protect it when the frog is swimming or leaping. Although it dims vision to some extent, the frog is better off with it than with none at all. A similar covering, although it works across the eye from the nasal side, is found in birds. It shields the eyes from the rush of air in flight, which would otherwise dry their surfaces. Man has the vestigial remains of such a lid in the inner corner of his eye, but since it long since has ceased to function, he achieves the same result by wearing goggles.

Not all protecting coverings can be removed at will. The unblinking stare of a snake is not due to an absence of eyelids. He has them, but they have grown together and become transparent, to form permanent protective coverings known as "tertiary spectacles." They become scratched and scarred in a manner which must affect vision to a great degree. Each time the skin is shed, however, the outer layer of the spectacles peels off as well and other surfaces are exposed, just as good as new.

Of all diurnal vertebrates, the snakes have probably the lowest visual acuity. They are unable to see motionless objects. If an intended prey suddenly stops and "freezes," he is immediately lost visually. The tongue then becomes the most important sensory organ, as the snake explores all possible objects with it, although the olfactory senses are of some assistance.

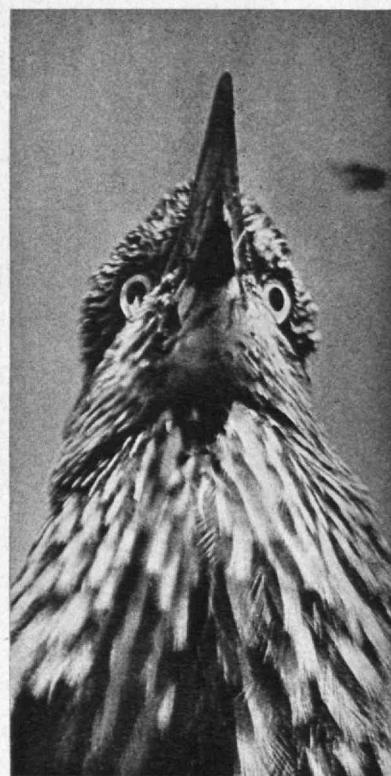
How do animals see at night? In the vertebrate eye, there is one basic factor, a preponderance of rods. The receptive layer of the retina contains rods or cones or both, usually both. The rods are highly sensitive to relatively small amounts of light, but they have no color discrimination and can give only a diffuse image. This condition is as much a function of the entire rod system as of the rods themselves, or more; yet the end result is the same. The cones (and their system), on the other hand,

are so designed as to give a sharp image as well as color discrimination, under conditions of relatively high light intensity. The human eye contains a combination of both rods and cones, so that as a consequence it is able to adapt itself, within certain limits, to both nocturnal and daylight conditions. Nocturnal animals such as the white-footed mouse, however, have a great preponderance of rods. They have gained the ability to see with no more than threshold lighting but have sacrificed visual acuity as a result. And yet, for this little mouse, the relative protection of darkness is almost his only chance for survival, and his eyes have made the best of it.

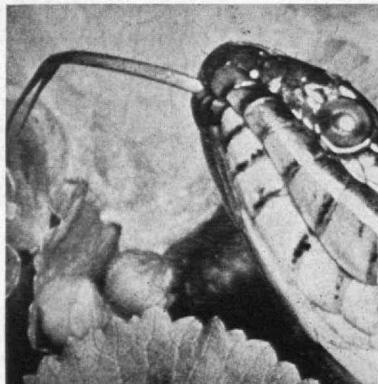
The outstanding feature of birds' eyes is their tremendous size. Many of the hawks and owls have eyes as large as or larger than those of man, and they are of three distinct shapes — flat, globose, and tubular. In the globose eye of the hawk, the lens is relatively flat and far forward, giving a large image. The eye of the common red-tailed hawk is about the same size as that of a man, but it has nearly twice the resolving power of a man's eye. Other hawks have as much as eight times that of man. The eyes are set far forward in the head, so that as the hawk soars aloft, he scans the fields below with binocular vision. He is essentially sweeping the ground with a pair of high-powered binoculars.

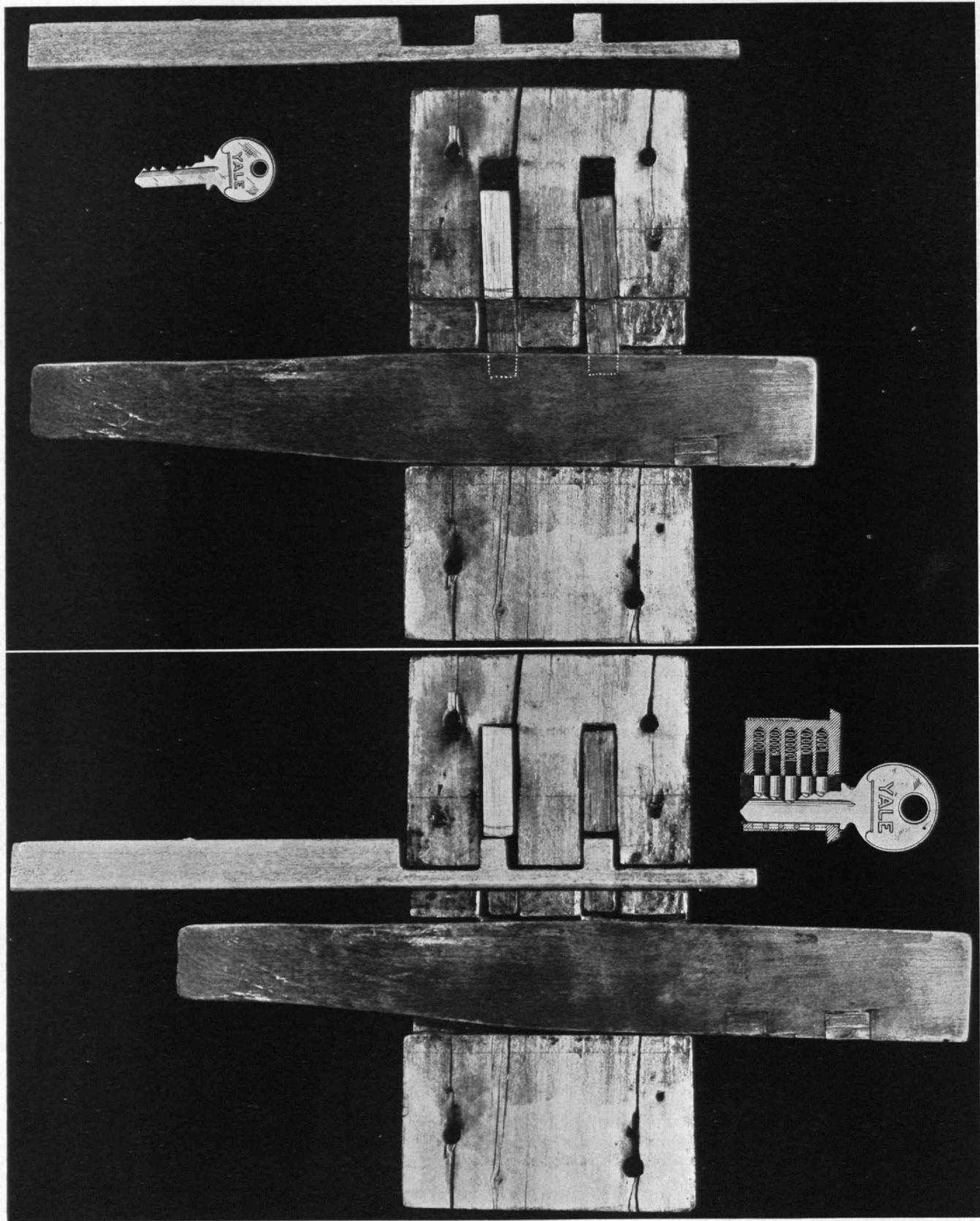
Not all birds have their eyes placed in the same position as the eye of the hawk. The bitterns and other herons, for example, have developed a peculiar means of avoiding detection. On the approach of danger they freeze, with their bills pointed straight in the air, expecting to be mistaken for the reeds and cattails among which they hunt. If their eyes were placed high in their heads, they would be staring at an empty sky. As a consequence, their eyes are set so low that the birds can actually look under their chins and hence straight ahead at the enemy. The reverse of this situation occurs in many of the snipes, notably in the woodcock, whose eyes are set far back in his head. As he probes in the mud for insects, he is as a consequence able at the same time to keep a watchful lookout above.

These are only a few examples of the countless ways in which seeing is accomplished. The full story may never be known, for while we may dissect and analyze any eye, we may never learn how the brain interprets the visual impulses which it receives. Behavior studies give us an indication, but they do little more than just that, inasmuch as the conclusions we reach are those of a human brain acting on information transmitted by a human eye. Thomas Carlyle well said, "The eye of the intellect 'sees in all objects what it brought with it the means of seeing.'"



At your right a snake, a mouse, a hawk, a heron gaze.





Lydia Mueller, Franklin Institute

Above: Method and function compared in the Pennsylvania Dutch wooden lock and the Yale lock. The case of the wooden lock was attached to the door by several screws. Tumblers inserted in two grooves in the case are — at the represented moment — penetrating partly into the heavy bolt. The mechanism is locked. The tumblers are fastening the lock case and the bolt or plug together, just as nails would do. Below: The Pennsylvania Dutch wooden lock and the Yale lock, both with keys inserted and mechanisms unlocked. In the wooden lock, the key is lifted, raising the tumblers so that they no longer block the bolt. The modern lock as depicted in the maker's catalogue is shown at the same position: The dentations of the key align the tumblers. Now the more complicated movement of the mechanized lock would begin: It would start to revolve.

A Complicated Craft Is Mechanized

Development of the Pin-Tumbler Cylinder Lock by Linus Yale, Jr., Illustrates the Essential Spirit of American Invention

BY SIGFRIED GIEDION

AUTHOR'S NOTE. — This essay in industrial history is based on research preparatory to a volume dealing with the creative as well as destructive influence of mechanization on the coming about of modern life. Here is neither the place nor the opportunity to explain the methodological background of that research. But some hints about it may be given.

Complicated craft: The difference between European and American industry is marked from the very beginning, the late Eighteenth Century. Europe mechanized, above all, the simple craft; the characteristic American development was the mechanization of the complicated craft. In Europe, the mechanization of simple crafts — mining, spinning, weaving — became nearly synonymous with industry. In America, the story is different. Here, the fundamental trend is to be seen in the mechanization of the complicated craft which demands men of special skill as well as a large amount of time and labor. America began in the Eighteenth Century with mechanizing the trade of the miller and ended in the Twentieth Century with mechanizing the job of the housekeeper. In between, all the trades concerned to a certain extent with our intimate life had undergone the same process of mechanization: the tailor, the shoemaker, the farmer, the locksmith, the baker, the butcher. In Europe, most of these complicated crafts still form important strata of society. That they have nearly disappeared from American life has had enormous influence on habits and thoughts.

Mass production: When the question arises: "What is the greatest contribution of America to mankind, what has America done that influences the whole Western world?" there is no doubt of the answer. It is the tremendous instrument of mass production, which

has been developed more intensively in this country than in any other. Mass production, replacing skilled labor, replacing the complicated craft, penetrates into our most intimate life. It is a very dangerous instrument; everything depends on how it is handled: When it is misused, or when it assumes dictatorial power over the human mind, the whole hierarchy of human values begins to crumble. Man loses his perspective and becomes uncertain in faith and judgment. On the other hand, when the instrument of mass production is used in the right manner and restricted to the place it deserves, then, for the first time in human history, a differentiated culture can emerge without any kind of open or concealed slavery.

Historical consciousness: There are excellent studies on the social and economic background of our period, and on the lives of the great entrepreneurs. But when one tries to get an insight into the phenomena themselves — into the anonymous history of inventions and ideas, which are the tools that build the instrument of mass productions — one finds nothing but gaps. In general opinion, inventions must pay dividends; if they do not, they are obsolete and without significance. But, on the whole, inventions and the trends they reveal govern our present-day life. Nothing shows the complete lack of historical consciousness more strongly than the fact that because no funds could be found to prevent, the most precious witnesses of American history — the original models of the United States Patent Office — have been wandering about from barn to barn since 1926, when, with the consent of Congress, they were sold for some thousands of dollars to an English industrialist. Historically speaking, this disrespect is as though the bones of our ancestors should be strewn to the winds. — S. G.

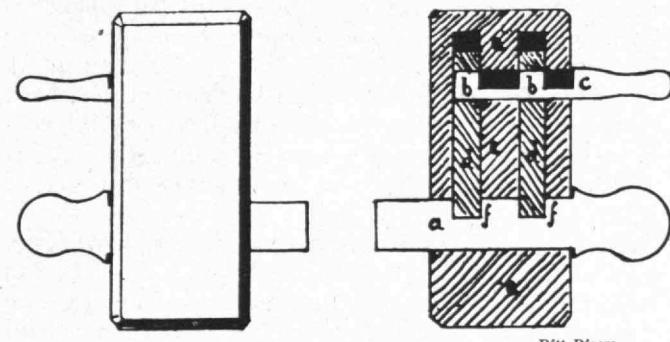
FOR some centuries after the late Gothic period, the locksmith was known as the artisan of a most elaborate handicraft. He united mastery of hand with the gift of untiring inventiveness. His work included, besides locks, all sorts of artistically wrought ironwork: gates, grilles, knobs, handles, and the fantastic iron ornamentation of chests.

The Gothic period was very sparing of bodily comfort but felt strongly that the imagination should animate the objects of man's surroundings. The woodwork of a door is rough and not highly finished; the craftsman spent all his pains on the sensitive area of the door: the keyhole. He framed it with delicate ornamentation as if he were illuminating a manuscript. And the handle which draws the latch he transformed into an abstract serpentine shape ending in an animal head, as in the lock from a house at Visp, Switzerland, shown on the cover of this Review. Later, in the Eighteenth Century, the last period of refined handicraft, craftsmen turned their energy to the creation of large-scale works like the wrought-iron grilles screening choir from nave in monastery churches, surrounding parks, forming the gates of public squares. They wove transparent iron veils before the altar or the park.

The development of this artistry ran parallel with the achievement of Eighteenth Century furniture and comfort beginning with the last years of Louis XIV and the Regency. But it all died out as the industrial revolution set in. What the smith had formerly forged by hand out of iron was then entrusted to the mold. Between 1825 and 1845, as observed in the report of the jury of the Paris

International Exhibition of 1867, the highly skilled smiths disappeared from the big cities. Grilles, railings, and balconies had come to be made of cast iron. At the time of Haussmann's transformation of Paris under the Second Empire, large firms had sprung up, offering stocks of cast-iron pieces, from the continuous balconies of the boulevards to cast-iron copies of Michelangelo's sculpture. Their catalogues were like textbooks of art history, and expanded to three or four hundred pages.

But we shall not deal further here with this aspect of mechanization in the locksmith's trade. It was unfruitful from the historical point of view, for it followed the easy way of mechanization, the sole aim of which is to make



A wooden double tumbler lock from the Faroe Islands. The only difference between the Pennsylvania Dutch lock and the lock from the Faroes is that the key (b b c) is passed horizontally in another groove, parallel to the one of the bolt. Two notches are cut into the tumbler, to permit the key to pass.

copies as cheaply as possible. *Mechanization in the locksmith's sphere is of historical interest only when it chooses the hard way: when it is achieved by creating new methods and new aims.* There is no creativeness in the mechanical production of cast-iron grilles and ornaments.

To gain an insight into the real nature of mechanization we have to confine ourselves to the lock. Nowhere else did the transition from handicraft to mechanical production in this respect take place with such speed and efficiency as in the United States. The steps of this change occurred in the two decades between 1830 and 1850, decades that are of outstanding importance in the formation of American industry's distinctive features. At first, the European practice of using wrought iron for the various parts of the lock was followed in America, but almost from the beginning a differentiation began by the substitution of "cast material in place of wrought. . . . This change of material greatly reduced the cost of production, and soon led to changes in design. . . ."¹

The change from manual to mechanized operation has another starting point as well — in bank and safe locks. Out of experience in the construction of these expensive locks, costing from one hundred to four hundred dollars, there evolved in the Sixties of the last century a new type of efficient and inexpensive mechanized lock. From the late Eighteenth Century onward, the problem of the burglarproof lock intrigued the mind of inventors almost as much as did the solution of the revolving-pistol problem in the late Thirties, when the most extravagant solutions were proposed for the automatic change of bullet.

Of the multitude of answers offered for the lock problem, we shall isolate one which was developed by Linus Yale, Jr. It came about with the great flood of inventions of the Sixties, and it may stand as a symbol of the transition to mechanical production in lockmaking. Minor details of Yale's lock have changed with time, but his final solution of the lock problem was found from the beginning, as far as the principle is concerned.

We are choosing this lock for discussion because in it the principle of the handmade lock is completely changed. It translates ancient as well as recent traditions into terms of elaborate mechanical production. The change that concerns us here does not consist in merely producing by machine the parts that formerly had been made by hand. The interesting thing in this instance is the transformation of the whole interior organism of the lock, from its technical construction down to its key.

It is not easy for man to leave the beaten track: to do so often means breaking so deeply rooted a habit as opening or closing one's desk drawer or one's front door in a customary way. Yet this was the very change wrought by Linus Yale, Jr., with his pin-tumbler cylinder lock. Save for the specialists, few know the device by its technical name; rather, it has been indiscriminately called simply "Yale lock." Even so, use of it spread slowly. It is not mentioned in Pitt-Rivers' excellent book, *On the Development and Distribution of Primitive Locks and Keys*, published at London in 1883. In Europe, this lock has come into general use only in the course of the last two decades, even in countries having, like Switzerland, a high standard of living. Presumably the introduction of American automobiles in Europe is connected with the spread

of the lock on the Continent. Linus Yale's bank lock of 1851, on the other hand, became known in England soon after it was invented.

Linus Yale, Jr., was born in 1821 in Salisbury, N. Y., where his father kept a locksmith's shop. Young Yale was reared in the atmosphere of lockmaking and invention then breathed everywhere in the northeastern United States. We know but little concerning his brief life.² He died of heart failure, suddenly, at the age of 47, while away on business in New York in the Christmas of 1868. His financial position seems never to have been rosy. In July, 1868, six months before his death, he met Henry R. Towne, and in October they organized a corporation for the manufacture of locks. This has become the large enterprise known as the Yale and Towne Manufacturing Company, Stamford, Conn., whose trade-mark is the name "Yale." But Yale was fated never to see the plant where his new and mechanized door locks were to be produced by machine.

Linus Yale, Jr., was never a shrewd businessman. He was absorbed in his inventions. His attitude toward life was more akin to the spirit of Concord, of Thoreau and Emerson, than typical of the brisk businessman of the latter part of the century. The few facts that we know about his life tally with the portrait we have of him. His is a small face with deep-set, inward-looking eyes. The smooth, relaxed features indicate the musician or the artist rather than the efficient manager. And indeed, Linus Yale, Jr., wanted at first to become a painter, a portrait painter. Had he been born in France, he might well have found his way to the Quartier Latin, for he certainly did not lack the rare gift of fantasy. But the most creative forces of the America of that day did not go into painting. They were moved by the urge to invent and to act in the great revolution that transmogrified human activity in every sphere.

² No study of his life has been published. The account of him in the "Encyclopedia Americana," Vol. XXIX (1940 edition), contains inaccuracies and makes no mention of his great invention.

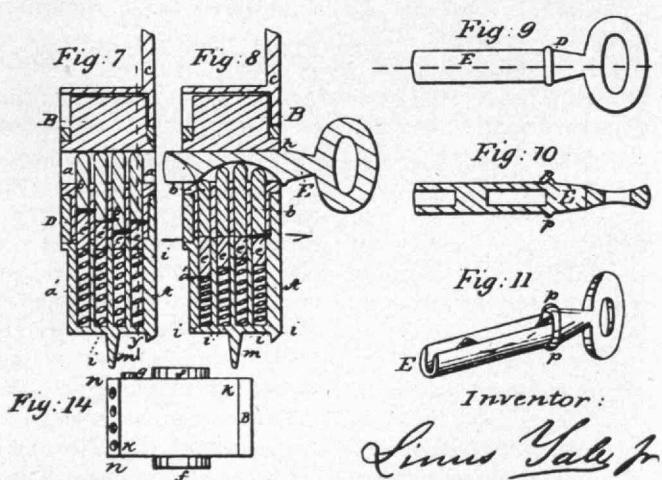


Fig. 1. In this first patent for his pin-tumbler cylinder lock, January 29, 1861, the principal ideas of Linus Yale, Jr., are already fully developed. There are the tumblers aligned in one row, one behind the other, divided into two parts. There are the fixed cylindrical lock case (or escutcheon) and the smaller, eccentric cylinder (or plug), with their corresponding holes, which form the pin chambers, partly in the lock case and partly in the movable plug. Here the tumblers are still aligned with a round key and the key is inserted in the traditional manner, groove downward.

¹ Henry R. Towne, *Locks and Builders Hardware, a Hand Book for Architects* (New York, 1904), p. 39.

Linus Yale's father³ was already famous as a maker of bank locks. The son did not remain with him for long. Soon becoming independent, Linus, Jr., spent his most creative years in Philadelphia. Here he lived and here he had his shop from 1855 to 1861,⁴ during which years he brought out most of his own bank locks. Here, too, in 1856, he submitted his "Magic Infallible Bank Lock" for examination by the Franklin Institute's committee on science and arts. It is still on show in the Franklin Institute, bearing the autograph of its inventor.⁵ Here also he conceived each of the successive designs that led him step by step to the safe lock without a keyhole — the combination lock — the principle of which is in such widespread use today. And here, finally, he invented the famous pin-tumbler cylinder lock. He filed the specification of his first patent on this lock in 1861, in Philadelphia. By this time he was known throughout the country and his firm was considered the leading one in Philadelphia.⁶

³ The family came to Connecticut in the Seventeenth Century. Elihu Yale, for whom Yale University was named, was a brother of an ancestor of Linus Yale.

⁴ Linus Yale, Jr., was listed in the Philadelphia Directory from 1856 to 1861. In the first year, he was entered as "Yale, Linus Jr.—Safes"; in 1857 and 1858, as "Yale, Linus Jr. & Co.—Safes and Locks." From 1856 to 1859, he lived at Milestown and his shop was at various addresses on Chestnut and Walnut streets. In the last three years, 1859 to 1861, his business address was 248 North Front Street and his home was at 142 North 15th Street. I am indebted for this information to Mr. Walter A. R. Pertuch, librarian of the Franklin Institute, Philadelphia.

⁵ This lock was already widely used then, as is proved by references in Linus Yale, Jr.'s, only publication, *Dissertation on Locks and Lock-Picking* (Philadelphia, 1856). It was patented as No. 9,850 on July 12, 1853.

⁶ Edwin T. Freedley in *Philadelphia and Its Manufactures* (1859), p. 332, speaks highly of the permutation and bank lock made by "Mr. L. Yale Jr. and Company," calling it the most celebrated lock of modern times.

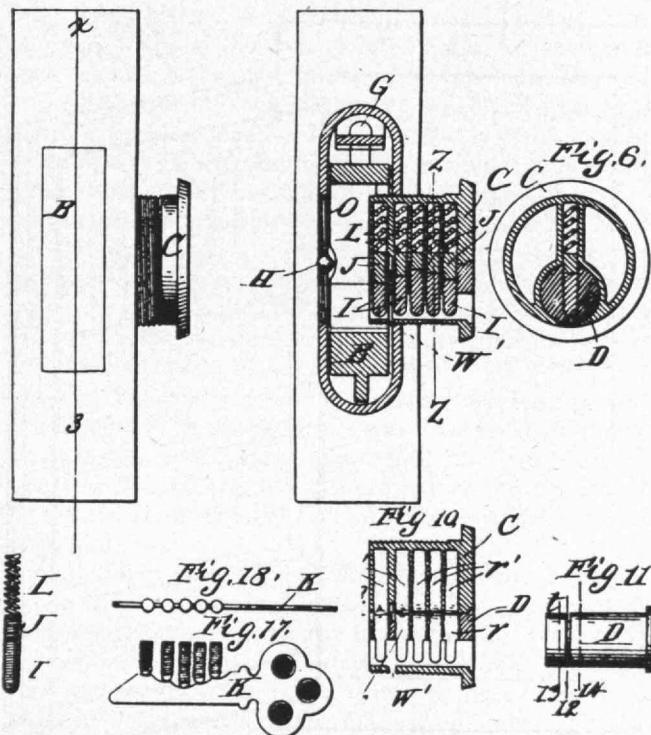


Fig. 2. In the second patent for his pin-tumbler cylinder lock, June 27, 1865, Yale achieved the final stage of his lock, except for some minor technical changes. The key has become "a thin slip of steel properly shaped to bring the lines of division between the tumblers into the same line."

The pin-tumbler cylinder lock invented by Linus Yale, Jr., includes the following essential parts:

First, the lock's closing mechanism — with the exception of his first patent of 1861 (Fig. 1) — consists of a set of five tumblers, an arrangement that has never since been altered. The tumblers are called "pin tumblers" because they are extremely thin when compared to the parts normally used in lockmaking. They are thin steel bars or steel wires and, for reasons which we shall see presently, are in two separate sections (Figs. 1, 2, 3).

Second, the case enclosing the lock as a whole — a part later called the "shell" or "escutcheon" — is cylindrical and can be screwed into the door. It is a hollow cylinder incorporating along its length a rib through which run five vertical holes. The holes form chambers for the pin tumblers (Fig. 3). Yale himself, in his patent letter of 1865, describes the "tumbler-case" as having "a cylindrical bore through it." The boring is done eccentrically.

Third, into this boring is fitted a smaller cylinder, later described as a "plug." This also has, in the words of Yale, "holes bored through it in planes perpendicular to its axis."⁷ The holes in the plug then correspond with those in the rib of the fixed tumbler case and prolong them. In certain circumstances, however, this second cylinder may revolve. Hence Yale's lock derived its technical name of "cylinder lock," distinguishing it from the lock mechanism in use since the Fifteenth Century.

To sum up the elements of Yale's lock, we have: the fixed cylindrical lock case, or escutcheon; the smaller, eccentrically placed cylinder, or plug (both cylinders having corresponding holes); and, fitting vertically into

⁷ Linus Yale, Jr., Specification for Patent No. 48,475, June 27, 1865.

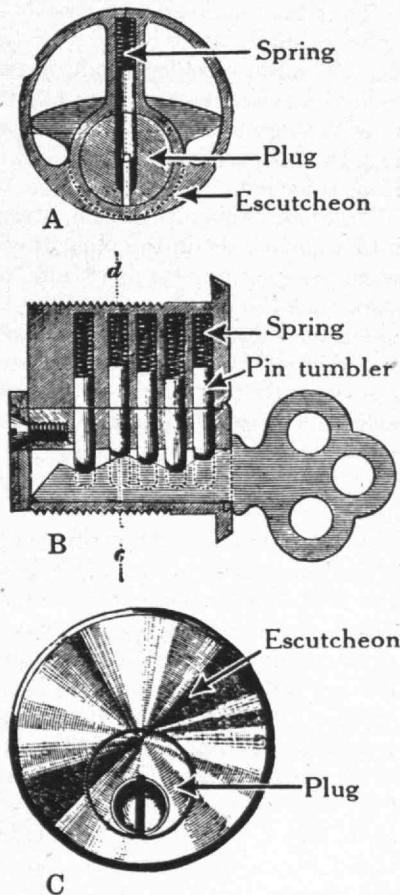


Fig. 3. Yale's lock in 1889, as shown in Catalogue 12 of the Yale and Towne Manufacturing Company, 1889. A. Transverse section of the escutcheon taken through one of the pin-holes. B. A longitudinal section of the escutcheon of a Yale lock. The key is shown in the lock raising up the pins, or tumblers, to such height that the joints between the two pins contained in each hole coincide exactly with the joint between the plug and its hole, leaving the plug free to revolve. C. A front view showing the key-hole and plug.

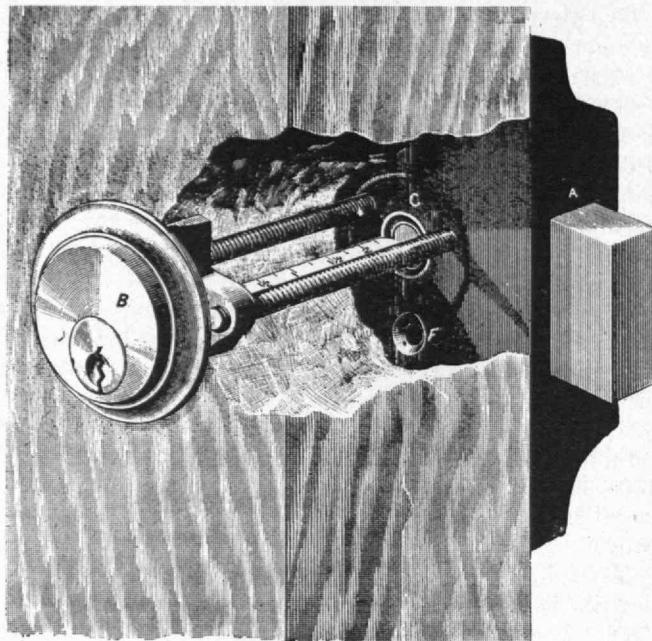


Fig. 4. The independence of the size of Yale's lock from the thickness of the door, as shown in Catalogue 12 of the Yale and Towne Manufacturing Company, 1889. The bolt can be placed, as is shown here, independently of the plug. A steel bar attached to the revolving plug goes through the thickness of the door and connects the small mechanism of the lock with the heavy bolt.

these holes, five round pins, each in two sections. (The upper section was later called the "driver," and only the lower member retained the name of "pin.") Constantly pressing the pin tumblers downward are five small spiral springs set into the uppermost part of the holes.

Thus the pin chamber is partly in the lock case (fixed cylinder) and partly in the plug (movable smaller cylinder). The pin tumblers, under pressure from the springs, hold the lock case and plug together, just as nails running through two pieces of wood prevent them from sliding. In this position the plug is immovable. The mechanism is locked.

To unlock this mechanism, a small flat key is inserted into a narrow slit in the plug. It passes under the downward-pressing pin tumblers and raises them to a point such that the junctures between the pin tumblers — divided as they are into two separate sections — correspond exactly with the juncture between the lock case and the plug, that is, just between the fixed and the mobile cylinders (Fig. 3). When they have reached this precise point, they no longer oppose the rotation of the plug, which will now go around as one turns the key. The mechanism is unlocked.

Practically nothing remained of the ancient type of key after Yale's innovations. As Yale himself described it for the first time, in his patent letter of 1865, the key is a "thin slip of steel properly shaped to bring the lines of division between the tumblers into the same line." Thus the key acts only to adjust the pin tumblers. The key's small inclined planes serving this purpose made it, in the words of a contemporary, "resemble a worn-out saw."

At the same time the square tang of the key, with its bits, or dentation, has disappeared. The key has become small and thin, and can be punched or stamped in a moment. Above all, its function has changed. It does not act directly on the bolt, as it had done ever since man in-

vented the closing mechanism: it merely turns the revolving cylinder. The key is now a mere handle for that purpose.

"Prior to Yale's invention the size of the key was proportioned to the size of the lock and its length was necessarily such as to enable it to reach through the door."⁸ As Yale conceived it, however, the plug would revolve when acted upon by the key, whilst the bolt could be placed independently of it. Thus the door could be as thick or as thin as necessary, the lock and key remaining unchanged in size, and uniform with all other locks and keys of the same type. This led to the universal adoption of standard locks and of standard-sized keys for doors of the most diverse kinds. The painstaking illustration in the Yale and Towne catalogue of 1889 (Fig. 4) gives a glimpse into the mechanism by tearing away parts of the wood. It shows how a steel bar attached to the revolving plug can go right through a thick door to act at a distance on the bolt at the other side.⁹ Linus Yale, Jr., foresaw this development in his second patent (1865), but in a posthumous patent issued several years after his death (Fig. 5),¹⁰ he showed in detail the ultimate advantages to be derived from the independence of the key mechanism from the bolt. Locks for post-office boxes were to be equipped in this way.

Only by stages could Yale throw off his inherited conceptions. When he brought out his first lock, he intended it as a device for cupboards and drawers, not for doors (Fig. 1). He still aligned his tumblers with a round key (having a notched groove, or flute, instead of the edge of the later models), and it is interesting to note that he

⁸ The Yale and Towne Manufacturing Company, Catalogue 12, 1889.

⁹ *Ibid.*

¹⁰ "Improvement in Locks for Post-Office Boxes." Patent No. 120, 177, October 24, 1871.

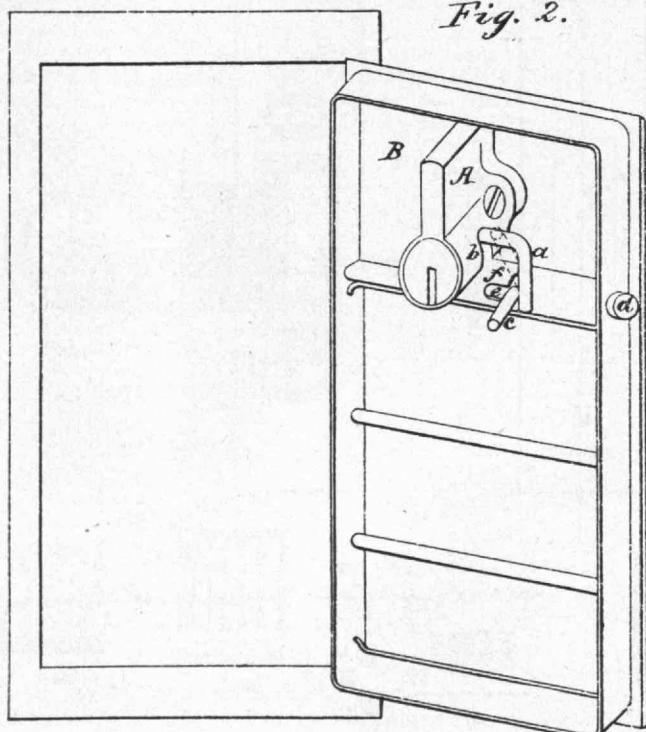


Fig. 5. In this patent on locks for post-office boxes, October 24, 1871, Linus Yale, Jr., saw the ultimate advantages to be derived from the independence of the key mechanism from the bolt. A bent arm (a) acting on a distant bolt (d) is "attached to the turning mechanism of the lock."

Fig. 6.

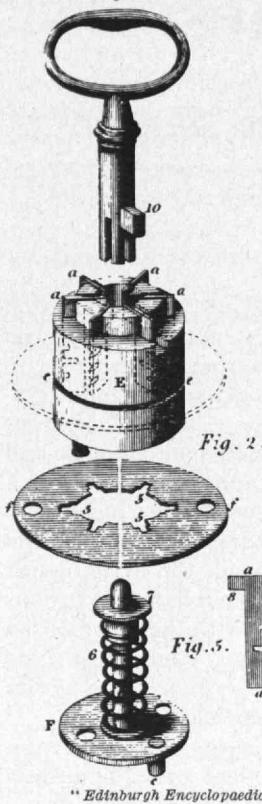


Fig. 2.

Fig. 5.

"Edinburgh Encyclopaedia"

Fig. 6. To show the differentiated and yet close relation between the bank lock of the late Eighteenth Century and the solutions of the younger and elder Yale for mechanized door locks, here is a detail of the celebrated bank lock of Joseph Bramah of 1784. The "Edinburgh Encyclopaedia," American edition (Philadelphia, 1832), says of it: "In the plate f, the whole number of sliders are pressed up, or caused to rise in their grooves, as far as the top of the cylinder E, by a spiral spring, 6, coiled loosely round the pin, b, Fig. 5. . . . The first locks were made with a separate and independent spring to each slider; but it is a very great improvement the introduction of one common spring to raise up the whole number. . . ."

are packed radially around the cylinder, and each piston is made in two separate pieces, "said pistons being kept pressed in toward the center by springs (G) attached to the frame plate of the box."¹²

This lock, conceived from the beginning as a door lock, was derived from the heavy bank locks. Even in Joseph Bramah's celebrated safe lock of 1784 (Fig. 6), "the tumblers [were] packed round the cylinder of the key . . . by springs."¹³ The related idea of a "revolving plate pierced with a series of holes and having a pin which moved the bolt" as well as a "series of springs each having a pin at one end"¹⁴ was not unusual even much earlier.

The essential elements later to be used by Yale's son were already present in 1844 (Fig. 7): the tumbler divided into two parts; the springs; one fixed and one revolving cylinder; and a key (K) without bits, acting directly to adjust the tumblers. The bitless key is "a cylinder, containing as many wedge shaped cavities or grooves (X) on its periphery as there are pistons."¹⁵ Does not this patent letter of 1844 read like a description of the younger Yale's achievement? "In order to lock the bolt the key must be pushed in as far as it will go, the inclined plane of the key comes in contact with the pistons (F) and forces them back until their place of union between the two parts of the tumbler is coincident with the joint between the inner revolving cylinder and the fixed outer cylinder which can be turned now by the key."¹⁶

When the question arises where the lock of Linus Yale, Jr., came from, time and time again the reply has been, "It came from the Egyptian lock." Yet even the most recent excavations do not reveal much concerning the old Egyptian lock and the way it developed. The so-called Egyptian lock certainly falls into the category of tumbler locks, but it lacks one essential (*Continued on page 38*)

¹² *Ibid.*¹³ Pitt-Rivers, *op. cit.*, p. 25.

¹⁴ Compare, for instance, Charles Tomlinson, *Rudimentary Treatise on the Construction of Locks* (London, 1853), p. 83, in which he mentions "Stanbury's lock invented in the United States about forty years ago."

¹⁵ Linus Yale, Sr., Patent Letter, 1844.¹⁶ *Ibid.*

Fig. 4

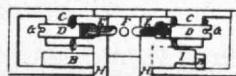


Fig. 5

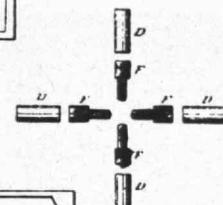


Fig. 2

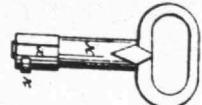
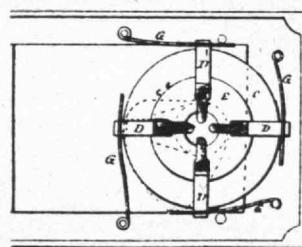


Fig. 7. The transition from the complicated bank lock to the mechanized door lock. In this early door lock patented by Linus Yale the elder on June 13, 1844, four tumblers are packed radially around a revolving cylinder, pierced with holes for the tumblers. Each tumbler, which is here still called a "piston" — as often in bank locks — is made in two separate pieces and pressed toward the center by springs (G). The bitless key is cylindrical, resembling in many respects Bramah's key and acts also on the "pistons" (D F), as Bramah's key acted in a more complicated manner on the "sliders."

¹¹ Specification of Linus Yale, Letters Patent No. 3,630, June 13, 1844.

Goats, Brands, and Theories

Still Defying Reduction to Equations and Logic, the Aurora Borealis Impels the Search for Knowledge

BY E. H. BRAMHALL

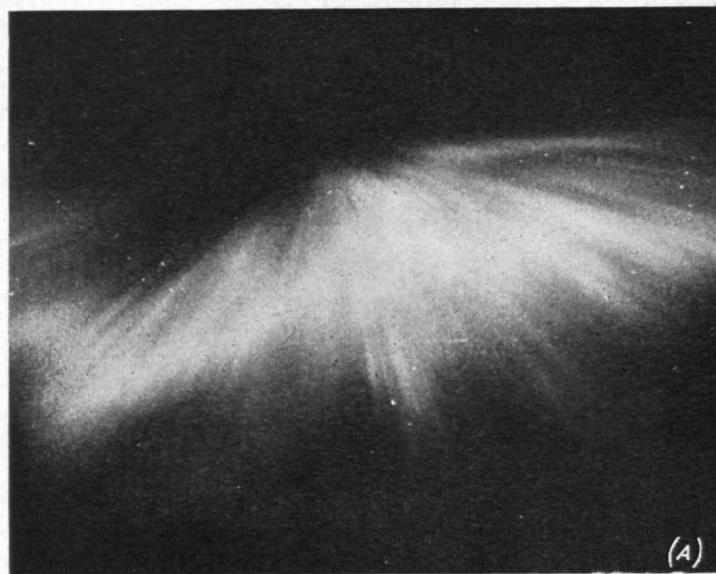
AMONG the spectacular manifestations of nature, few can surpass the displays of the aurora borealis as they appear during the cold winter nights in our northern latitudes. It is not strange that references to the aurora are found in ancient literature. Though seldom seen on the shores of the Mediterranean, it was known to the Greeks and Romans. In his work on meteorology, Aristotle mentions the aurora. Two forms described by him are the *δαλοί* (brands) and *ἀλύες* (goats), the latter apparently suggested by the rapid pulsations and movements, resembling leaps, of rays in curtains. Cicero refers to auroras as *faces* (torches), and Pliny devotes some space to them in his *Natural History*. Since faint auroras were sometimes confounded with comets, it is not improbable that errors of this sort occur in the ancient auroral catalogues. In more than one record is found a description of cohorts running to a fire, only to view a beautiful auroral display. During the Sixteenth Century, when astrology was at its height, auroral displays became a source of terror, and pilgrimages were made to avert the heavenly wrath manifested by these signs. Not until the end of the Seventeenth Century did superstitious terror cease.

Philosophers of comparatively recent times have bequeathed to us a number of charming suggestions concerning the origin of the aurora. We find auroral light attributed to "clouds of ferruginous meteoric dust ignited by friction with the atmosphere," to "a lunar rainbow or an intralunar convergence of streams of slightly illuminated cosmic dust," and to "the flow of electric fluid over tiny ice crystals in the upper atmosphere"—for some unexplained reason, the "electric fluid" was supposed to become luminous as it flowed over these particles. Accord-

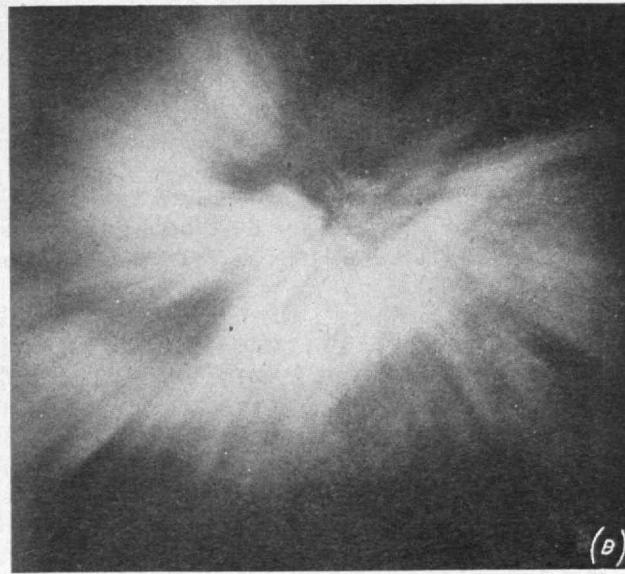
ing to another idea, a change in the internal constitution of high clouds, connected with the motion of "electric fluid," resulted in the emission of auroral light.

In Eskimo folklore — unfortunately no written literature exists in that complex tongue — we find theories which suffer little by comparison with some of ours; and who should know more about the aurora than the Eskimos? In this iconoclastic age, however, we are inclined to view with some skepticism the picturesque idea of spirits playing football with a dragon's head, the disembodied head quite understandably belching cold flames in furious resentment. Spirits playing football with the imagination would be more to our way of thinking. And in our more scientific moments, we now prefer to connect the aurora with the motion of electrons and particles.

Since 1741, when Hiorter and Celsius observed variations of the magnetic needle coincident with the auroral displays, the existence of a close relation between auroral and magnetic activity has been established by numerous investigators. Thus it has been incumbent upon modern theorists to kill both birds with the same stone — a rather difficult feat without recourse to the idea of electric currents flowing in the atmosphere. The conception that such currents existed in a conduction layer of the upper atmosphere was hypothesized by Balfour Stewart in 1882 to explain the diurnal variations of terrestrial magnetism — and that without benefit of Oliver Heaviside, A. E. Kennelly, or long-distance communication. True enough, recent radio-wave experiments have given us a somewhat better idea of how and where these currents exist in the upper atmosphere without, however, providing much additional information as to their primary cause.



Courtesy E. Dayton Thorne



Courtesy R. W. Olsen

Fig. 1. Aurora of September 18, 1941: (A) Half corona at 20 hours 10 minutes, Patchogue, N. Y.; (B) Corona, Caldwell, N. J.

Direct information on the position of the aurora in space has been obtained by Størmer and others through measurements of numerous parallactic photographs. These have indicated boundary heights of the visible aurora lying most commonly between 90 and 120 kilometers. Few heights below 80 kilometers and few in excess of 300 kilometers are obtained, though some points have been measured as high as 1,000 kilometers. These figures may well be borne in mind when the question of sounds produced by the aurora arises — as it inevitably will if there are real sourdoughs in the company. In spite of scattered but vigorous protests based on visual evidence, it appears that we may assume the height of the auroral zone to be approximately 100 kilometers — more than four times as high as the present ceiling of man's ascent into the stratosphere. Significant is the fact that the height of the region where auroras most frequently occur, practically coincides with the height of the *E* layer of the ionosphere as it has been measured by means of the pulse-echo method.

Birkeland held electron streams ejected from the sun responsible for auroral displays, and Størmer has thoroughly investigated the trajectories of such electrons as they enter the earth's permanent field. The magnetic fields resulting from the calculated trajectories of these electrons are not inconsistent with those observed in polar regions. Certainly, the influence of the earth's field on electron streams explains very satisfactorily the existence of the so-called auroral zones — zones of maximum auroral frequency approximately symmetrical about the geomagnetic pole, and distant some 23 degrees from it. Serious objection arises to the concept of an electron stream, however, for unless the electrons composing it

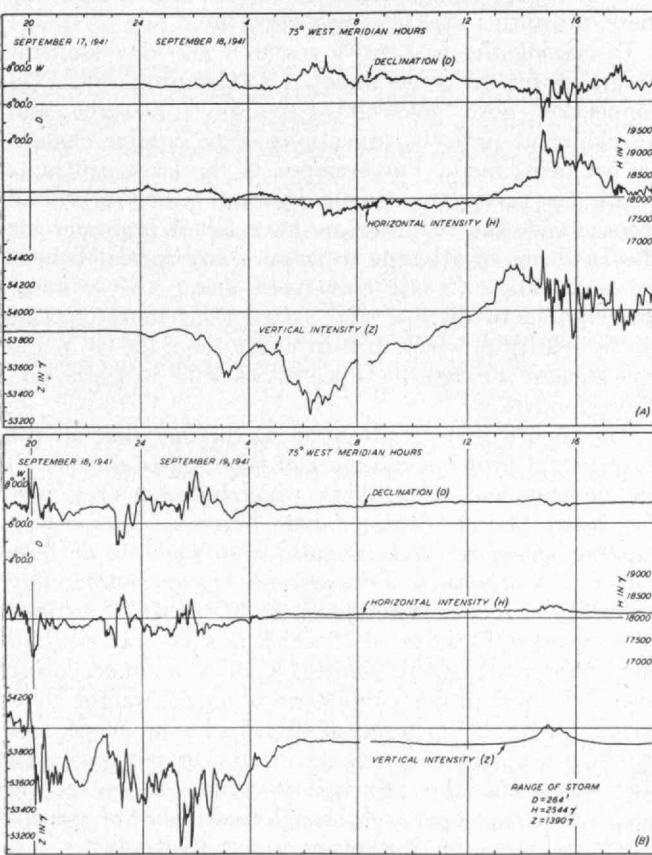


Fig. 2. As the Cheltenham, Md., Magnetic Observatory recorded a magnetic storm: (A) September 17-18, 1941; (B) September 18-19, 1941.

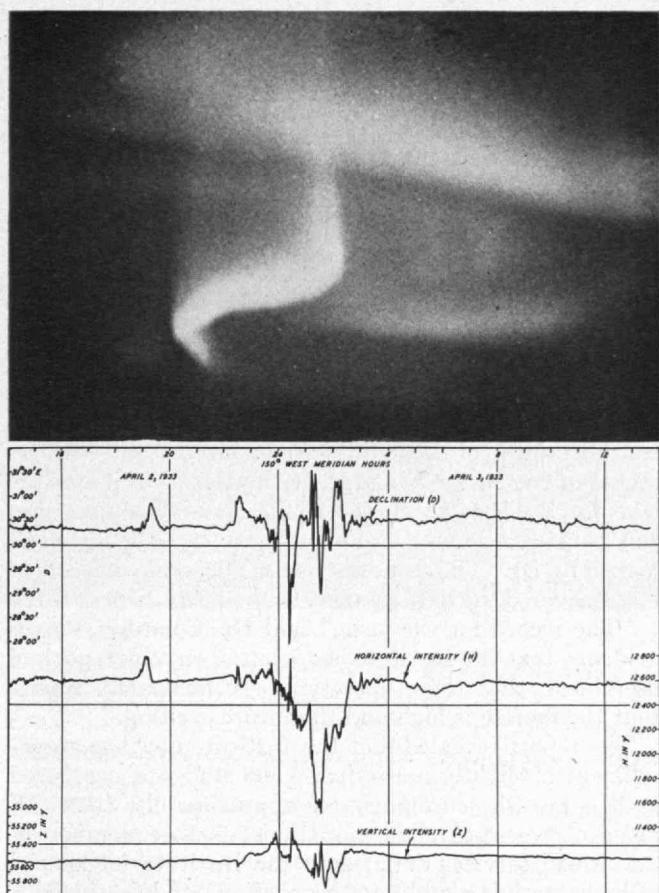


Fig. 3. Top: Aurora of April 3, 1933, College, Alaska. Bottom: Records of magnetic storm, April 2-3, 1933, College, Alaska.

were of improbably high velocities, electrostatic repulsion would ensure dispersion of it long before it reached the earth. If we insist upon the theory of a stream of charged particles, the electrical neutrality of the stream must be postulated. The essentially complex nature of the phenomenon is realized when consideration is given to the reactions of our corpuscles to the whimsies of solar and terrestrial electrostatic fields, gravitational fields, light pressure, and to the magnetic field of the sun as well as that of our earth.

In the search for plausible theories consistent with the modern point of view, the action of ionizing radiation from the sun on our upper atmosphere has not been overlooked. Radio-wave exploration of the ionosphere has shown that ionization is being continuously produced in that region, its intensity depending upon the sun's zenith angle. To explain the aurora, we presume that electrons with initially high upward velocities are produced in the highly rarefied atmosphere; as they spiral downward in the earth's field, they eventually lose their energy by collision with air molecules in the auroral zone. This concept is not at variance with the appearance of quiet, homogeneous arcs, which are of such common occurrence in the north. But it does not seem to answer the questions of an observer who has witnessed the transitory splendor of capricious forms — luminous, pulsating canopies of rays in soft green, rose, amber, and fog white — the floating veil of Aurora, Goddess of the Dawn.

Spectroscopy has often been of assistance in the elucidation of problems relating to phenomena occurring in space inaccessible to man, where knowledge must depend upon inference. We are not sur-

(Continued on page 54)

THE INSTITUTE GAZETTE

PREPARED IN COLLABORATION WITH THE TECHNOLOGY NEWS SERVICE

The President Reports

THE war activities of the Institute, all the resources of which are devoted to training and research for the service of the nation, were described by Dr. Compton in his report to the Corporation on October 13. The past year has in many respects been the most significant in Technology's history, and the President's Report contains much of great interest on the present achievements of the Institute and the rich promise of its future. The Review here presents a comprehensive summary of the accomplishments of the year, to be followed next month by Dr. Compton's discussion of specific projects to be considered for development in the postwar period.

"The record for the year," said Dr. Compton, "gives evidence that the Institute is operating on a high peak of usefulness, that these operations are financially sound, that the morale is high and the future exciting."

The report revealed that the Institute now has an enrollment of slightly more than 4,500 students, compared with a pre-war enrollment of approximately 3,100. Of those at present enrolled, more than 3,000 are members of the armed services detailed to the Institute for special technical training, and 1,400 are civilians studying in fields classified as essential to the war effort. Dr. Compton noted that the total number of staff and employees is now approximately 4,300, as against about 1,100 before the war.

Speaking of the year-round educational program adopted to meet the immediate demands for war training for the armed services and industry, Dr. Compton said: "In common with practically all educational institutions of the country, the Institute has adopted the accelerated educational program based on curricula which are pursued continuously through the calendar year instead of through the normal academic year of approximately nine months. This acceleration has been required of all institutions participating in the Army and Navy programs. It has furthermore been advisable for civilian students in order to train them for industrial or war services as rapidly as possible and in order that they may proceed as far as possible with their education before becoming subject to military service.

"No one questions the advisability of this accelerated program under present war conditions. Some people are suggesting the desirability of continuing permanently on this accelerated basis after the war. . . . We do not share this view, believing that the best interests of all concerned will be served by our returning to the normal schedule as soon as circumstances permit. Return to the normal schedule will be a financially expensive operation on account of temporary loss of tuition income during the transition stage. This transition cost to the Institute might amount to one-half or three-quarters of a million dollars, though the loss may be very largely reduced as a result of the expected abnormal postwar influx of students coming for the purpose of completing an interrupted education or of better equipping themselves technically to meet the postwar competition for jobs."

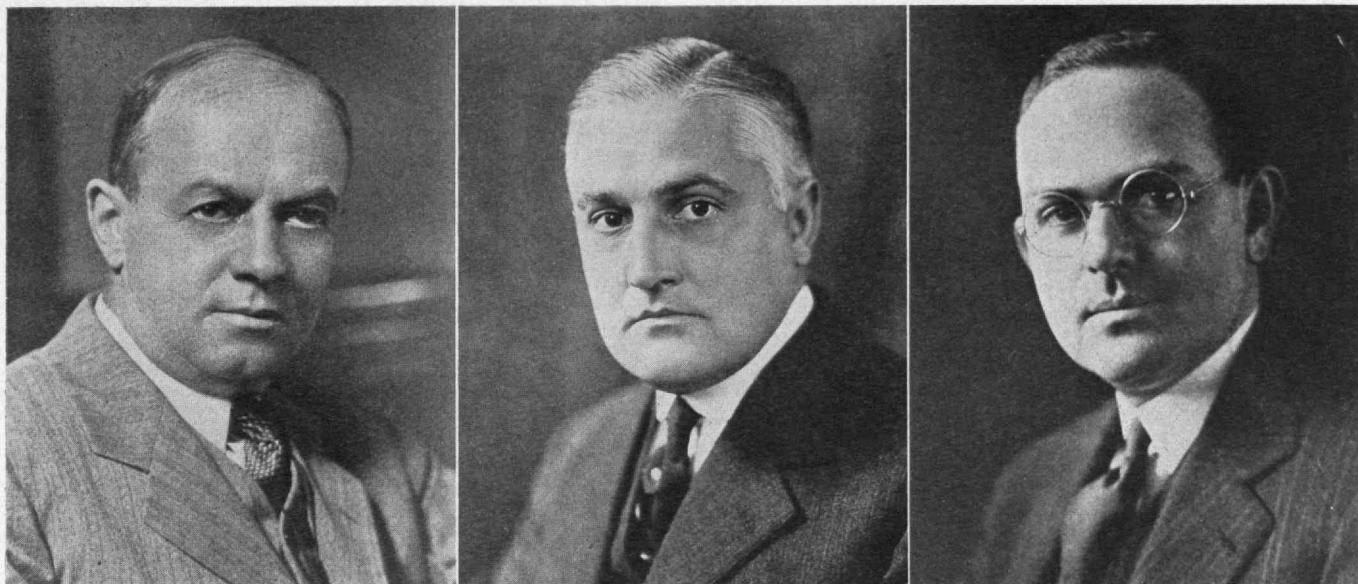
During the past year the Institute carried on war research and development work under 162 contracts, 49 of which were with the armed services or the National Advisory Committee for Aeronautics, 53 with the Office of Scientific Research and Development, and 60 with industrial firms. Operations during the past year involved the expenditure of approximately \$23,000,000, as compared with a pre-war annual expenditure of about \$4,000,000. Because of expanding war activities, the Institute has added or is in the process of adding to its educational and research plant more than 16 acres of new floor space, involving the construction of many new buildings. Of this amount, 260,000 square feet were acquired by rental.

In summarizing wartime policies, Dr. Compton said that the Institute's first basic principle is to be of maximum possible service to the nation in the emergency. A second basic principle, he added, has been to act with utmost expedition on any war job assigned to it. A third principle has been to perform these war services, in so far as possible, on a "no profit, no loss" basis.

Government contracts for war services fall into two categories, Dr. Compton explained, one providing educational programs for Army, Navy, or special personnel, and the other supporting various research and development projects. The Army and Navy have set up their educational procedures on a uniform basis for the country and provide separately for the cost of instruction, housing, mess, utilization of space, and activation.

Discussing the Institute's research and development programs for the government, Dr. Compton said: "In connection with government-sponsored research and development projects, inventions of patentable character are being made. Furthermore, in the large contracts which are carried on chiefly by staff widely recruited from outside the Institute, we have felt it improper for the Institute to attempt to acquire any special benefit from patents. . . . All employees under the contract are required to disclose and assign their investigations to the Institute, which in turn offers them freely to the government through the Office of Scientific Research and Development."

The report directed attention to the fact that all the government projects and most of the industrial research and development undertakings which have been set up at the Institute were centered here because of some pre-existing special research program from which to develop the project, or because of the presence of some outstanding authority in that field on the Institute's staff. When projects expanded to the point at which new laboratories had to be built, the Institute adopted a policy of not accepting any additional projects unless no other contractor comparably favorable in terms of personnel, equipment, and experience appeared available for the undertaking. To this same end, the principal government contracting agencies have co-operated through their policy of spreading work among institutions as widely as would be consistent with prompt, effective, and well co-ordinated action.



TO THE CORPORATION

Three new life members elected to the Corporation of the Institute are (left to right) William S. Newell, '99, of Bath, Maine; Louis S. Cates, '02, of New York; and Marshall B. Dalton, '15, of Boston. All have served before as term members of the Corporation.

Part of the President's Report was devoted to description of the financial situation of educational institutions during the war, including the hazards involved in war research and development contracts. He described the financial policies of the Institute in negotiating such contracts, including provisions for assurance of staff appointments and the responsibility of the Institute for equipment and stocks of laboratory supplies secured under government contracts. Discussing postwar programs, Dr. Compton said in an introductory note:

Just as in fighting a serious conflagration in a city, so in fighting this war we should not allow thoughts of subsequent plans to interfere with bringing the current critical situation under control. No consideration which would delay or render less effective our war effort should be permitted at this time; the crisis of the war is not yet past, and every day's delay in achieving clear-cut victory involves human and economic expenditures which are too great to be justified if by any effort of ours they can be avoided. Consequently I would make it clear that such consideration as I now give or recommend on behalf of postwar developments is predicated upon our possibility of doing so without interfering with our most effective possible contribution to the winning of the war. Within this reservation, however, there are certain plans that we can properly make in order to be prepared for opportunities which recent experiences have made rather obvious.

Everyone recognizes the fact that our curriculum and assignment of class schedules are highly organized and complex. Opinions may differ on the educational justification of this complexity. It seems clear to me, however, that we should develop a somewhat simplified program in order to be able to handle some additional complications in the inevitable aftermath of the war.

After demobilization, many young men will come to the Institute to complete their interrupted education. Others will come for training in advanced specialties in order to equip themselves better to meet postwar competition for jobs. We shall have an obligation to render the best service possible to these groups while at the same time we are readjusting our regular educational program to a postwar normal basis. The situation will therefore be temporarily complicated by a multiplicity of special schedules heavily taxing the time of our staff and capacity of our plant.

To "clear the decks for action," so to speak, I am recommending to the Faculty that it examine the possibilities of simplifying our regular undergraduate and postgraduate programs to the

maximum extent consistent with maintenance of our educational standards. I believe that the emergency would justify somewhat of an oversimplification of these schedules during the postwar transition period. Then, after experience with such simplified schedules, the Faculty can later decide upon the most desirable type to apply after the immediate postwar period of confusion and congestion is past.

As a result of Visiting Committee and Faculty studies in recent years and also as a result of developments during the war emergency, our attention is called to the desirability of increased emphasis on certain aspects of our curriculum as soon as the situation permits action to be taken. Such a move would be in line with the continuous re-evaluation of educational opportunities which the Institute has carried on from its beginning and which has led to such important educational developments as the Courses in Electrical, Chemical, Aeronautical and Biological Engineering, the Course in Business and Engineering Administration, the special educational procedures followed in the practice schools and the co-operative courses, and the activities of the Division of Industrial Coöperation.

Corporation Elections

ELECTION of three new life members to the Corporation of the Institute was announced on October 13 by President Compton. The new members are William S. Newell, '99, President of the Bath Iron Works Corporation, Bath, Maine; Louis S. Cates, '02, President of the Phelps Dodge Corporation, New York; and Marshall B. Dalton, '15, President of the Boston Manufacturers Mutual Fire Insurance Company and the Mutual Boiler Insurance Company of Boston.

Mr. Newell was an instructor at the Institute from 1900 to 1902, when he joined the engineering staff of the Bath Iron Works, where he served until 1925. He then became a member of the staff of the New York Shipbuilding Corporation, remaining until 1927. Since 1928 he has been president of the Bath Iron Works Corporation. Mr. Newell served on the Corporation of the Institute as an alumni term member from 1936 to 1941.

Mr. Cates, who began his engineering career immediately upon his graduation from the Institute, has since held important positions with various mining and copper



Official Photograph, U. S. Army Air Forces

Colonel A. R. Crawford of the Matériel Command, United States Army Air Forces, Wright Field, Dayton, Ohio, places the Distinguished Service Medal on Benjamin S. Kelsey, '28, colonel in the Air Forces. Awarded the Distinguished Flying Cross in 1938 for his action in landing a bomber after fire had severely damaged one wing in a night flight, Colonel Kelsey was officially cited for the Distinguished Service Medal for "exceptionally meritorious service in a duty of great responsibility . . . in the capacity of project officer . . . in the development of an airplane which has achieved outstanding tactical success. He contributed more than any other individual to the advanced engineering development of the P-38. . . . Without his untiring effort, courage and faith, this aircraft could not have attained its present stage of military utility. . . ."

companies. From 1919 to 1930 he was also associated with the Bingham and Garfield Railway Company. He has been president of the Phelps Dodge Corporation since 1930. As an alumnus of the Institute, he served as a term member of the Corporation from 1933 to 1938.

Mr. Dalton was associated with the Liberty Mutual Insurance Company of Boston from 1916 to 1934 as safety engineer, district engineer, assistant branch office manager, branch manager, New England district manager, and vice-president. He was elected in 1934 to the presidency of the Boston Manufacturers Mutual Fire Insurance Company and in 1937 to the presidency of the Mutual Boiler Insurance Company. As president of the Technology Alumni Association during the year 1937-1938, Mr. Dalton was an ex officio member of the Corporation, and he was elected to term membership on the governing body of the Institute for the five-year term from 1938 to 1943.

Daniel M. Wheeler, 1846-1943

TECHNOLOGY's third oldest Alumnus, Daniel M. Wheeler, '68, died at his home at Pittsfield, Mass., on September 29. Mr. Wheeler, who was born in Rutland, Mass., was in his 98th year. He was chief engineer of the

Berkshire Street Railway and was active in administrative work associated with the company's properties until a short time before his death.

The son of Daniel R. and Susan Halladay Wheeler, he was a student at Worcester Academy before entering the Institute's first class. He was one of the civil engineers who directed construction of the Central Massachusetts Railroad, which later became part of the Boston and Maine system. It was as a result of his experience on this project that he was chosen to be chief engineer in charge of a section of the Magdalena Railroad in Colombia, South America. Upon his return to this country he was associated with important railway projects in the West, among them being several tunnels and two railway bridges over the Mississippi River. He was an assistant engineer on the construction of the St. Louis and San Francisco Railroad in Missouri and Arkansas, and later he supervised construction of the Minneapolis, St. Paul and Sault Ste Marie line and the Missouri-Kansas-Texas Railroad, which was built in 1893. Another project in which he was assistant engineer was the Burlington, Cedar Rapids and Northern Railway, now part of the Rock Island system. For almost a quarter of a century, he served as state inspector of Massachusetts railways, and for 10 years was a member of the civil engineering firm of Buttrick and Wheeler.

Mr. Wheeler, who was honorary president of the Berkshire Technology Club, was a member of the American Society of Civil Engineers and the Institute of American Genealogy. He was married in November, 1868, to Arvilla J. Putnam, who died in 1918. Their children are Milton M. Wheeler, '94, Grace L. Wheeler, Mrs. E. R. Kinsey, and Mrs. Charles F. Harris. There are also 13 grandchildren and great-grandchildren.

The Institute's second oldest Alumnus, a member of the Class of 1869, is Ezra F. Taft, who was born three months earlier than Mr. Wheeler. The place of honor as Technology's eldest alumnus belongs to Professor Emeritus Robert H. Richards, '68, who will be 100 years old next August.

Faculty Appointment

APPOINTMENT of Jacob P. Den Hartog as professor of mechanical engineering at the Institute has been announced. Now a commander in the United States Naval Reserve, Dr. Den Hartog will be on leave of absence for the duration of the war to serve in the Bureau of Ships in Washington. Before receiving his commission in the Navy in 1939, he was associate professor in the school of engineering at Harvard University.

Born in Ambarawa, Java, Dutch East Indies, in 1901, Commander Den Hartog went to Holland in 1916 and was a student at the Technische Hoogeschool in Delft from 1919 until his graduation as an electrical engineer in 1924. He came to the United States the same year to enter the student training course of the Westinghouse Electric and Manufacturing Company. From January, 1925, until August, 1930, and again from August, 1931, to August, 1932, he held a post in the mechanics division of the Westinghouse research laboratory in Pittsburgh. During this period he was engaged on various important problems of mechanics, first as an assistant to Stephen Timoshenko and later specializing on problems of mechanical vibration.

From 1925 to 1929, Commander Den Hartog took courses at the University of Pittsburgh, where he was awarded the degree of doctor of philosophy in June, 1929. During the academic year 1930-1931, he was on leave from the Westinghouse company for study in Germany at the University of Göttingen, where he carried on special work in the aerodynamic laboratory. In September, 1932, he was appointed assistant professor of applied mechanics, and in September, 1936, associate professor, in the engineering school of Harvard University, where he established himself as an outstanding authority in his field.

Commander Den Hartog is past chairman of the applied mechanics division of the American Society of Mechanical Engineers. He is a fellow of the Institute of the Aeronautical Sciences and the American Academy of Arts and Sciences. He also holds membership in the American Society of Naval Engineers, Sigma Xi, and Tau Beta Pi. He is author of numerous articles in the technical press and of a book, *Mechanical Vibrations*, which was first published in 1934. He was coeditor of the *Proceedings of the Fifth International Congress for Applied Mechanics*, which was held at Technology in 1938.

Albert V. Smith, 1897-1943

ALBERT V. SMITH, '20, superintendent of buildings and power at the Institute through the past decade, died suddenly on October 8. Appointed assistant superintendent of buildings and power in 1929, Mr. Smith had assumed the full responsibilities of his position in 1933, when he succeeded his father, Albert S. Smith. The efficient operation of the Institute's plant during the rapid expansion of facilities demanded by the activities of war was due in no small degree to the expert supervision of Mr. Smith, who brought to his work the same admirable qualities as his father had, and won for himself the respect and strong loyalty of his staff.

Born in Everett, Mass., on August 12, 1897, Mr. Smith was a member of the Institute's Class of 1920. He is survived by his wife, an infant daughter, and his mother.

Plans and Prospects

WITH commencement on March 6 in prospect for the Class of February, 1944—or 2-44 as the rosters of expedited wartime education show it—the Alumni Association will greet its newest members at an Alumni Day Dinner planned for March 4 at the Hotel Statler, Boston. Later announcements will be made as plans develop.

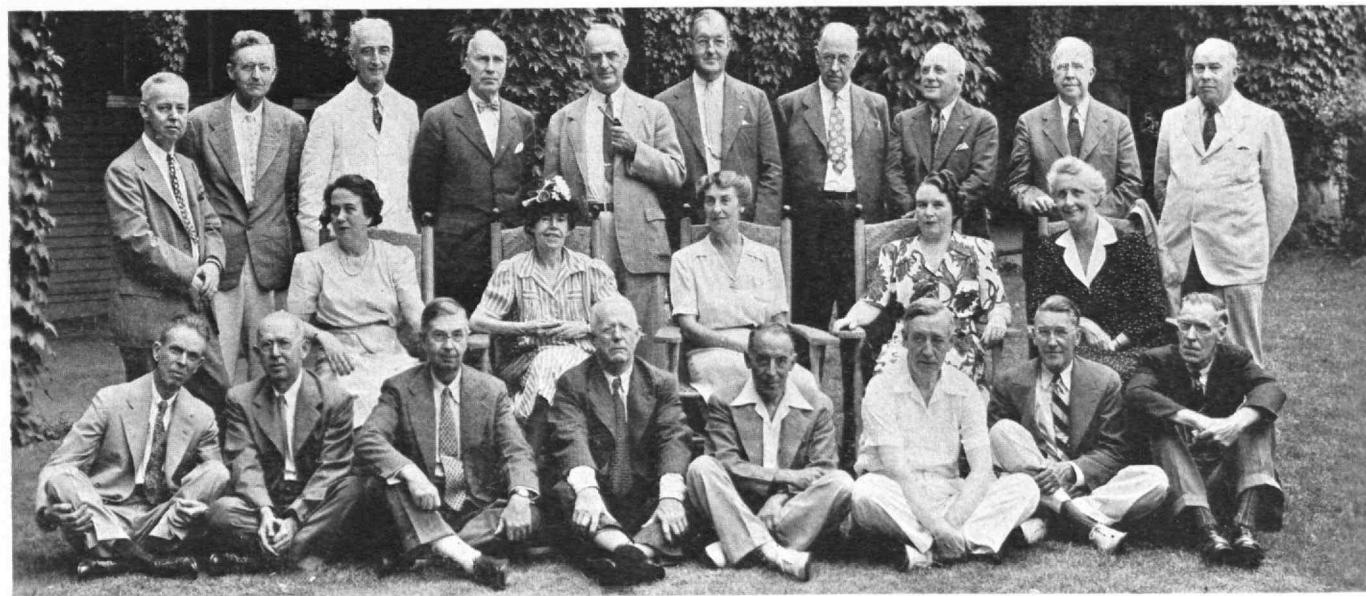
Meeting of the Metals

THE Institute was represented at the National Metal Congress of the American Society for Metals at Chicago by a notable group of members of the staff and Alumni whose activities in metallurgical research and production cover nearly every phase of their profession. The meeting gave the Technology men an opportunity to renew old friendships at a luncheon of the Technology Club of Chicago. The congress, which opened on October 18, marked the inauguration of Marcus A. Grossmann, '11, director of research of the Carnegie-Illinois Steel Corporation, as president of the society.

One of the important events of the congress was the award of the Henry Marion Howe Medal to Shadburn Marshall, '41, a member of the research staff of the Remington Arms Company. Coauthor of his prize-winning paper, "The Carbon-Oxygen Equilibrium in Liquid Iron," was John Chipman, Professor of Process Metallurgy, a former Howe medalist.

Charles H. Herty, Jr., '21, assistant to the Vice-president of the Bethlehem Steel Company, was the recipient of the Albert Sauveur Achievement Award for his contributions to a research program of great value to the open-hearth industry. He is also a newly elected trustee of the American Society for Metals.

Professor Alfred V. de Forest, '11, of the Department of Mechanical Engineering was chairman of one of the important technical sessions on nondestructive tests on metals. Another member of the Faculty at the meeting was Carl F. Floe, '35, Associate (*Continued on page 58*)



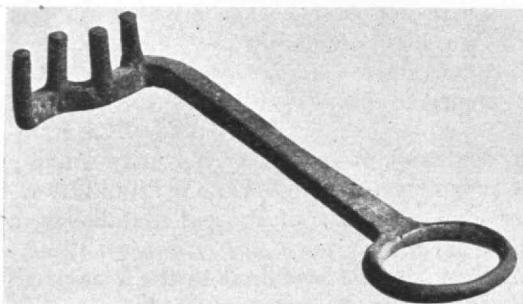
Celebrating their 40th reunion at New London, Conn., last June were these members of M.I.T. '03: front row, left to right, Clarence M. Joyce, George B. Bradshaw, Chester S. Aldrich, Robert J. King, Walter P. Regenstein, Harold Osborn, James A. Cushman, John J. Dooley; middle row, Mrs. Yerxa, Mrs. Joyce, Mrs. Eustis, Mrs. King, Mrs. Dooley; back row, Ralph B. Yerxa, Montague Ferry, Frederic A. Eustis, John T. Cheney, Paul R. Parker, LeRoy B. Gould, Myron H. Clark, Ichabod F. Atwood, Raymond Haskell, and Harry A. Stiles.

A COMPLICATED CRAFT IS MECHANIZED

(Continued from page 31)

feature of the tumbler lock of medieval times: Its tumblers are not aligned in one row; the iron pins project in various planes across the width of their horizontal holder, like the bristles of a brush. It is still used in this form in humbler Egyptian dwellings.

Howard Carter, who discovered the tomb of Tutankhamen, found some metal keys (Fig. 8) in the course of Lord Carnarvon's expedition.¹⁷ According to Carter, they date from the Ptolemaic period (323–30 B.C.). The metal is bent in the shape of an L, and the pins are disposed along a sinuous line on the short arm. The lock it fitted is the product of a technically advanced period that flourished under the Ptolemies, when Egypt became the center of Greek science and invention. Actually, this is a post-Egyptian period.



Courtesy Metropolitan Museum of Art, New York

Fig. 8. Iron key, length: 0.138 meter, of the Ptolemaic period (323–30 B.C.) from Lord Carnarvon's excavations at Draab abu'l Negga, Thebes; now in the Metropolitan Museum of Art, New York. Yale's lock cannot have been derived from the "Egyptian lock," as has been unanimously maintained. The complicated shape of the key stems from the Ptolemaic period. No examples of this kind are known from earlier periods.

More than a millennium later, the "Egyptian lock" seems to be unchanged in principle: A wooden lock, its case carved out of a block of sycamore wood (c. A.D. 800), was found by the expedition of the Metropolitan Museum, buried among the rubbish of a cell in the monastery of Epiphanius at Thebes (Fig. 9).¹⁸ It is of the same type as the lock of the Ptolemaic period, but greatly simplified. It, too, is L shaped, but its pins, although only two in number, are not aligned. One had to raise the bolt from beneath by inserting and lifting the iron part of the key. Since this type has persisted — it is still in use on modest dwellings in Egypt — it would seem that the medieval tumbler lock, with its tumblers lined up one behind another and with its flat notched key, originated outside Egypt. Archaeologists even doubt whether any tumbler lock originated in that land at all. Locks built on the tumbler principle (the Laconian lock) seem to have been used in Greece from the Sixth Century B.C. onward and to have been carried to Egypt in Greek or Roman times.¹⁹

¹⁷ We owe this information to the kindness of Ambrose Lansing, curator of the department of Egyptian art at the Metropolitan Museum of Art, New York.

¹⁸ Herbert E. Winlock and Walter E. Crum, *The Monastery of Epiphanius at Thebes* (New York, 1926), Part I, p. 57.

¹⁹ Compare Daremberg and Saglio, *Dictionnaire des Antiquités Grecques et Romaines*, article "Sera."

The question remains open: Whence came the lock that displaced the century-old types? The lock that Yale's father invented was likewise a pin-tumbler cylinder lock, with its tumblers divided into two sections, with its revolving inner cylinder and its fixed outer cylinder, with its springs driving on the tumblers. Over two decades elapsed before the elements that Yale's father used in his door lock found their final shape in the lock of the younger Yale. The facts at our disposal may suggest the broad outlines of this process.

In the Fifties, the younger Yale was wholly absorbed in the problem of the burglarproof bank lock, unsolved at the time. Each of his bank locks was successfully received, but he was not satisfied until he had reached a solution that he himself recognized as reliable. As we have seen, this was the combination lock that had no keyhole at all.

Every day as he handles the heavy key to his workshop door, he is made to wonder if it cannot be made more simple and convenient. Was it not ridiculous — the key that opens his "Magic Bank Lock" is scarcely as large as the key that winds the mantelpiece clock. There must be something wrong if an ordinary house door calls for so clumsy an implement whilst the foot-thick door of a safe can be opened with a key small enough to fit one's waistcoat pocket.

Strange as it may seem, it is easier to conceive intricate bank locks when this invention is in the air than it is to resolve a problem like that of the door lock, which had been at a standstill for centuries.

Could one progress no more along the way his father had entered? Pin tumblers were usable; but when set in this way, they were not reliable in operation. What good was a complicated, radial array of tumblers on a simple house door? What is adequate for the heavy door of a safe is not necessarily suitable for household use. And what was worse, the tumblers as they were arranged lay radially behind the keyhole — within range of sight and touch, to

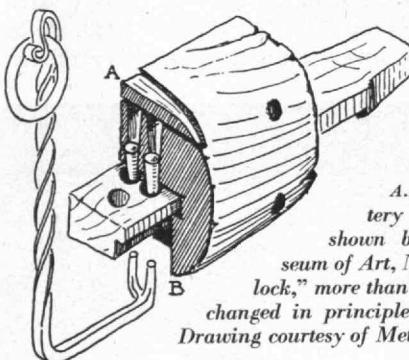


Fig. 9. A sycamore lock (c. A.D. 800) from the monastery of Epiphanius at Thebes; shown by the Metropolitan Museum of Art, New York. This "Egyptian lock," more than a millennium later, is unchanged in principle from the Ptolemaic lock. Drawing courtesy of Metropolitan Museum of Art.

the delight of any tamperer. It was an easy matter to insert a tool and probe until one reached the right spot. A new door lock had to be more burglar resistant than the old, or it was useless. In his bank lock, the younger Yale pushed the mechanism far back inside, beyond the picker's reach. He wished to follow this principle in his door lock as well, but complicated mechanisms were out of the question. This needed a different approach.

His father's idea not to use the key for shooting the bolt as it did in the old door locks met his need. The younger Yale tried in turn to confine the function of the key to aligning the tumblers so that a rotation could take place. But how to stack the pin tumblers simply, in depth,

(Concluded on page 42)

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A COMPLICATED CRAFT IS MECHANIZED

(Concluded from page 38)

so as to make it much harder than before for the picker? No archaeological research was necessary for this purpose. It would have led him nowhere, for to this day we do not know much about the Egyptian lock which, as reputation has it, inspired Yale.

Everywhere in Pennsylvania, on barns and perhaps in his day still on farmhouses, Yale could see those wooden tumbler locks that the settlers had brought over from Scotland, Germany, or Switzerland. Their tumblers were aligned in a single row (see page 26). The type is a survival of Gothic life, as were the tools and furniture of the first settlers. The Pennsylvania Dutch often expressed their playfulness by inventing new devices²⁰ which further increased the variety of their wooden locks. But there was one type of wooden lock which had closed medieval barns and houses; it had spread through Norway, Scotland, and the whole Continent. Its tumblers played in vertical grooves and were stacked in alignment, one behind the other. A flat wooden key, when inserted and raised, lifted the tumblers out of the bolt. This wooden tumbler lock with tumblers aligned in one row, unlocked by a flat notched wooden key, served for a long time as virtually the lock of mankind.²¹ It covered the whole earth, but where it developed and how it came about are apparently still riddles.

The idea can be traced back to antiquity. But there the trail vanishes. One can find the tumbler lock everywhere: in India, in Japan, and, sporadically, across all Europe. Its plain wooden frame, its grooves, its tumblers, its key — all could be shaped with the most primitive tools. We can assume that this peasant simplification of a more refined model unknown to us incited the younger Yale to the stroke of genius behind his invention: to align the tumblers one behind another, so simply and efficiently that the disposition has never been altered.

²⁰ Numerous examples of such locks are preserved in the Landis Valley Museum and at Ephrata Cloisters in Lancaster County, Pa., and elsewhere in this region.

²¹ An ancient type of extremely primitive Egyptian lock was found recently in a tomb of the XVIIIth Dynasty. Compare E. Schiaparelli, *Relazione sui lavori della missione archeologica italiana in Egitto*, Vol. II. *La tomba intatta dell'architetto che nella accropoli di Tebe* (Torino, 1927), pp. 107-108.

BETTER THAN BEFORE

(Continued from page 23)

of recurrence of accidents. Actually, however, the once handicapped is more careful than the nonhandicapped and almost completely immune against accidents, according to statements by foremen.

The new program requires a new technique, new types of hospitals and sanitariums connected with rehabilitation activity centers operated under medical supervision. The hospitals should be combined with large separated working areas for the ill and for the convalescent. They should provide occupational therapy areas with gardens, fields and forests, workshops, classrooms, and studios. The rehabilitation centers would be organized into general and vocational departments. The general, basic workshop (Continued on page 44)

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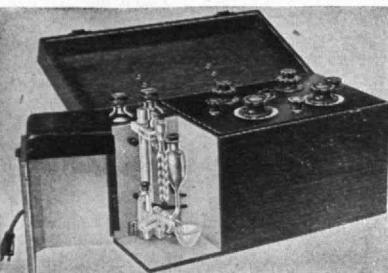


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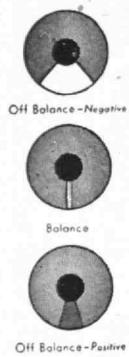
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BETTER THAN BEFORE

(Continued from page 42)

would lead to the physical and mental vitalization of the handicapped by an indirect and subconscious "education," ideally contemporary, based on the standards of the best progressive schools today. It would serve as a testing ground for the talents of the handicapped and provide sound vocational guidance. The professional departments, including laboratories for sciences and workshops for special occupations, would take the "graduates" of the general workshop for specific vocational training, bringing their re-education to a successful close.

Such a program may appear elaborate, but in the long run it would be more humane than the present inadequate practice as well as more economical. It would produce better, more balanced citizens who would have greater earning power, and so would reduce welfare cost. The truth of this statement can be checked if this constructive type of rehabilitation is contrasted with the sentimental type of the past. In every state, we still have veteran hospitals from the first World War. In them are a number of patients, depressed and fearful of giving up their sheltered security.

The new type of rehabilitation centers would require a layout where flexibility would be the main requirement, so that up-to-date research results could be introduced without delay. As a large-scale unit, such a center would resemble a university campus more than a hospital. A small-scale example exists already in the tuberculosis sanitarium for diamondworkers in Hilversum, Holland, where a number of contemporary approaches are made, or were, before Hitler. Among them are flexible hospital structures, separate workshop buildings, bungalows for the convalescents to live in with their families, under medical supervision, until full recovery. Such a setup for the handicapped, with convalescent annexes, could be adapted for a small-scale laboratory center in this country also.

The goal can be achieved, of course, only if enough personnel are available to execute the program. Therapists, psychologists, and physicians have to be willing to revise their traditional attitude and collaborate intensively with each other, considering patients in the totality of their abilities. As time presses concerning the rehabilitation of handicapped servicemen, a clearinghouse is needed for the integration of valuable data collected by individuals and by isolated agencies in this and in other countries. There should also be a place for research and for the training of personnel. Therefore it is suggested that a *laboratory school* and research department for problems of rehabilitation be established, designed to place especial emphasis on occupational therapy and psychotherapy.

The task of such a school would be to try out a new educational technique. This technique should be the integration of arts, science, and technology, with emphasis on inventiveness. Occupational, social, recreational, and educational therapists do not have to be artists to vitalize their patients for creative tasks, but if they are to be good therapists they must have had creative experience. The word "creative" is not used here in relationship to the arts only. "Creativeness" can be applied to all types of work in the artistic, scientific, and technological sphere. It means inventiveness, resourcefulness, the ability to

(Continued on page 47)

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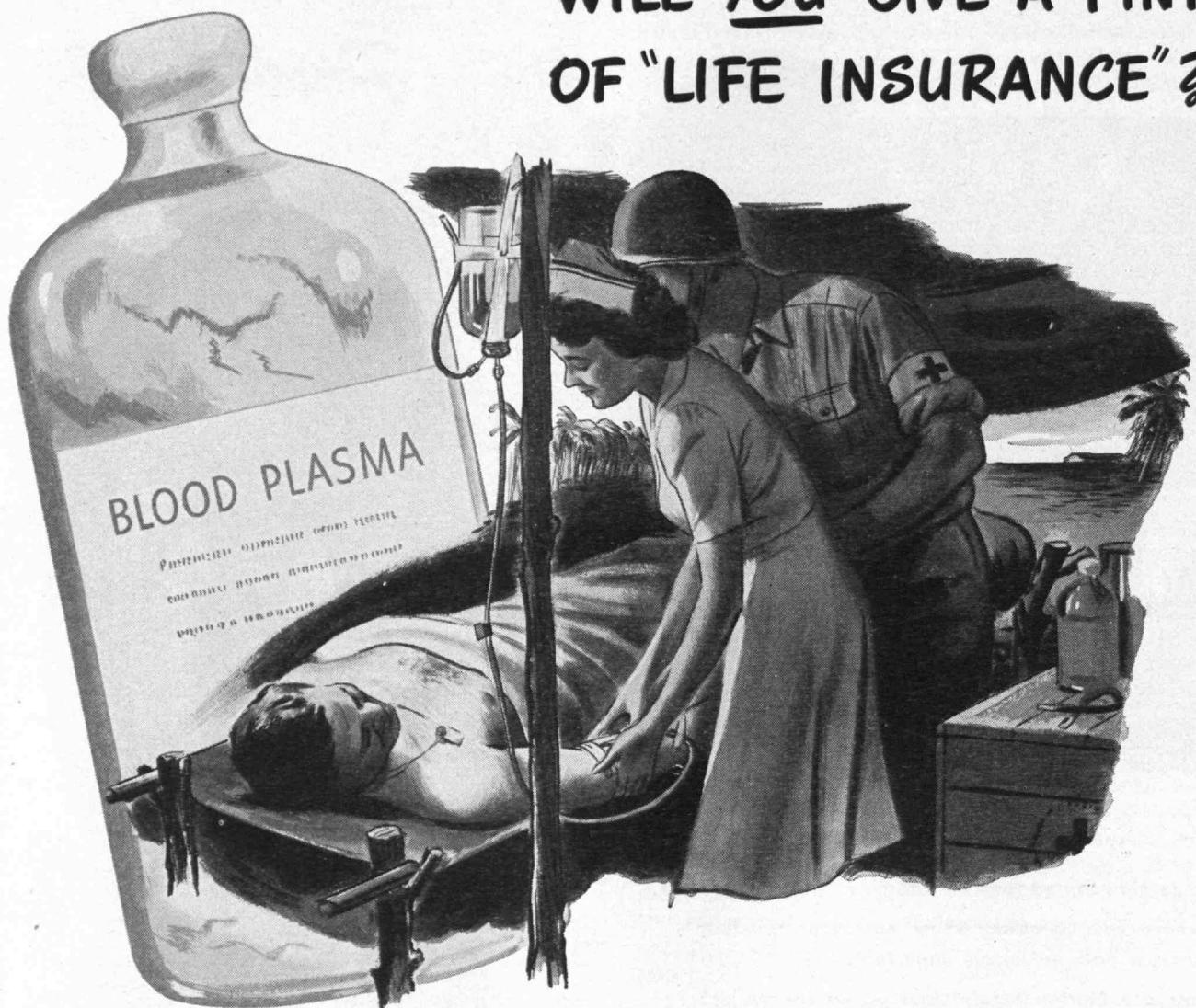
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BETTER THAN BEFORE

(Continued from page 44)

establish new relationships between given elements. Such creative experiences should be the daily routine in every occupational therapy school. The schools must emphasize the integrated training of all the faculties of their students. The new therapists must strive for a complete break with the well-meant but insufficient program which compels men in their most productive years to weave baskets, rugs, or Colonial mats without further plans for a more satisfactory vocational goal or without a consistent endeavor to establish co-ordination with present technological practices.

For the training of a new personnel in rehabilitation, I believe that the educational technique of the School of Design in Chicago * might well be employed. This technique, which could be called "conditioning to creativity," can be used for the future occupational therapists who will become "teachers," as well as for the handicapped patients who will become their "students." In this way the indivisible nature of creative education is emphasized. The difference will be only the application of the same subject matter for general and individual purposes. The occupational therapist will gain self-confidence and security in his profession, acquiring skill to produce and teach.³ The student, with the help of his newly educated teacher, will go through a gradual process of being conditioned to creative achievements, beginning with his basic capacities. After this development, he will be able to focus his interest more and more on specific vocational tasks in the professional departments of the rehabilitation centers or in other vocational agencies. These may lead him to diversified industrial occupations or intellectual professional studies, whatever seem to be more suitable to achieve complete reorientation. Desirable, also, is the education of handicapped persons for teaching. Their judgment is unsurpassable concerning the direction of activities of the disabled.⁴

The virtue of this new technique is that it can awaken hidden capacities and increase self-confidence. Its main principle is to break down complex tasks into their fundamental components so that they can be digested one after the other; also, to re-examine tools, materials, and processes utilized in these tasks; then, to attempt to integrate the results.

The first exercises are built upon sensory experiences through the medium of various materials, and are combined with theoretical studies. The exercises start with the skill of the fingers, the hands, the eye, and the ear, and their co-ordination. This is accomplished through so-called tactile charts composed of textures, the purpose of

* The School of Design in Chicago, of which Professor Moholy-Nagy is director, is founded on the principles of the Bauhaus at Weimar, with the objective of developing designers trained in the basic relationship of "form and function." — Ed.

³ In the excellent book, *Teaching the Sick*, written by George Edward Barton in 1919, I find a pertinent statement: "It is unreasonable to suppose that an anemic neurasthenic weakling, bored to death with her own life and incapable of firm decisions or of strenuous endeavor, should be able to instill into the mind of the sick man the very qualities which she herself lacks."

⁴ "The opinion of a normal man concerning the amount of work which a sick man can do is almost entirely worthless," wrote G. E. Barton, occupational therapy director of Consolation House, Clifton Springs, N. Y., who was himself handicapped.

which is to permit emotional experience to be gained from their organized relationships; through hand sculptures carved out of wood, to be held in the hands and manipulated; through machine woodcuts, which make lumber as elastic as rubber; through paper cuts which, if skillfully handled, lead to the understanding of basic structures — folding, cutting, rolling, scoring, and weaving. In addition, there are metalwork; plastics; weaving; drawing and color; mechanical drafting; photography; motion pictures; group poetry, plays, music, and dance; plane, volume, and space division and their further articulation. Thus a full co-ordination of potentialities can be accomplished.

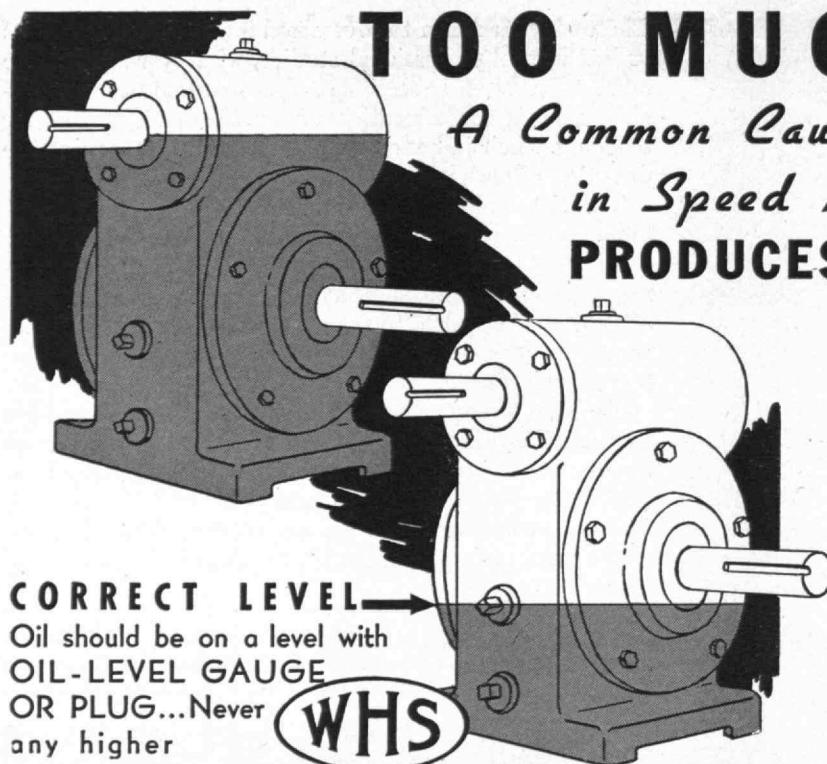
These basic subjects are organized at the first part of the training in a curriculum in which integration is achieved through a method of simultaneous handling of the same problem in various workshops and classrooms. For example, when a sculpture is made in the modeling workshop, the same sculpture serves as a study for light and form in the photo studio. Again the same sculpture is utilized as a departure for volume and space analysis in the class in mechanical drafting and as a theme in drawing and color exercises. The same object will be analyzed also in scientific and technological classes. Since many different angles are considered in such an approach, the student gains a comprehensive understanding of the same object.

Moreover, he soon becomes aware that this method can be utilized for various subject matters, giving him the courage to attack new problems with a sharpened sense of logical interpretation. At a later phase, questions of

business and production, of organization, and of motion studies, can also be included. For all types of re-education of the handicapped and mutilated, the Gilbreth scientific motion studies, originally introduced for economy of motions in industry and used for improvements in mass production, give an ideal departure for new research. The results may open up a steady flow of inventions by the handicapped himself. Since in his basic training he already will have had exercises for "inventions," he easily can find short cuts and new and advantageous forms in production. Obviously no one else will have so much interest as he in producing new appliances and auxiliary means to increase his range of activities and with it his earning power.

The American Medical Association has a required program for occupational therapy schools. If we use this as a minimum program, many of its subjects may be rejuvenated in the light of the new approach. With the new method we could, for example, re-educate the blind by emphasizing touch experiments. We could start out with simple tactile assemblage, then go into more complicated tactile compositions where the different qualities of the touch sensation, such as pricking, pain, temperature, vibration, and so on, are investigated. The tactile exercises fulfill manifold tasks: They give technical skill to the blind through purposeful differentiation of textures and assemblage techniques. They rebuild the zones of acuity of his observational field. They create a new world for him through the replacing of visual perception by tactile experience.

(Continued on page 50)



Too much oil in a speed reducer causes *churning* which often results in overheating. Pressure is also built up which, combined with the excessive heat, will tend to cause oil leakage at shaft openings.

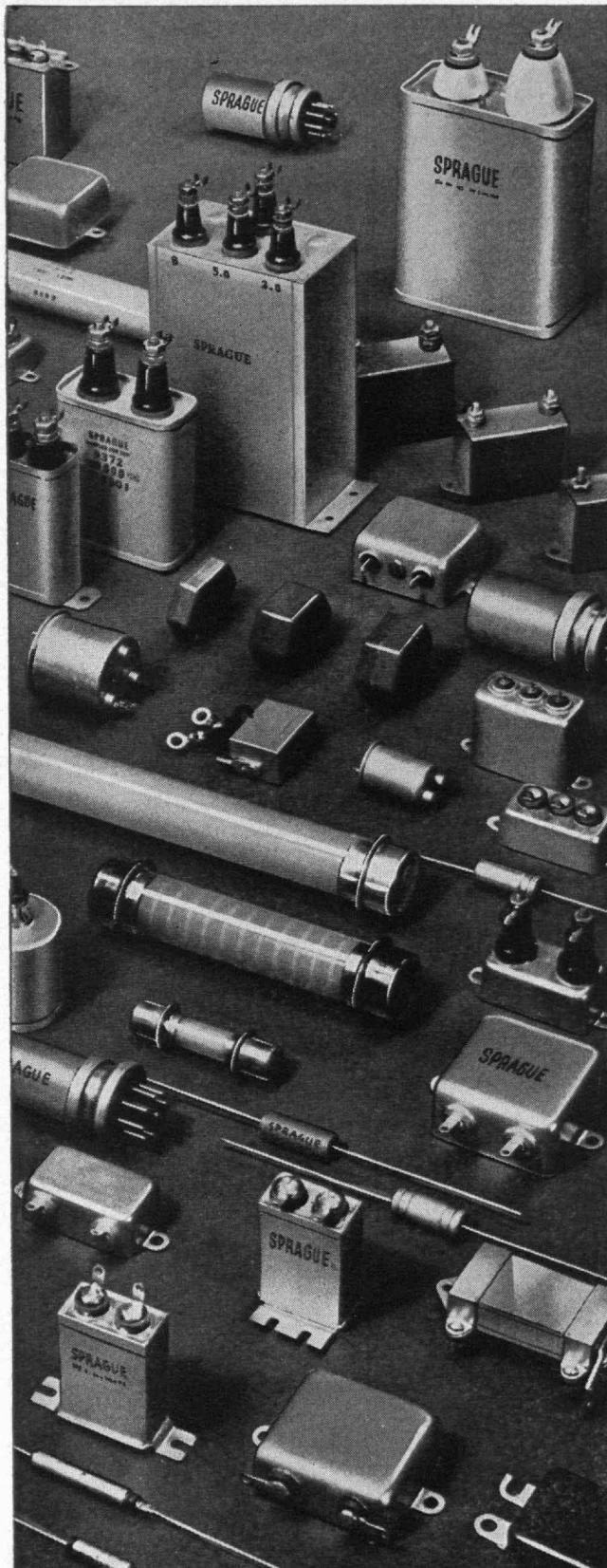
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plus c'est la
même chose"***

***(THE MORE IT CHANGES,
THE MORE IT IS THE
SAME THING)**

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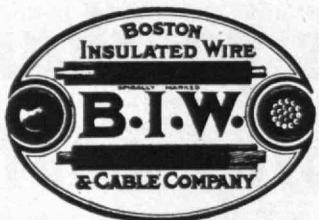


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BETTER THAN BEFORE

(Continued from page 48)

At the School of Design in Chicago we have had tactile charts tested by blind people. These and other tests have shown that such types of exercises could have positive influence on the re-education of the blind, thereby opening up fields and occupations in which special refinement of touch, hearing, or taste is required. In addition, individual and group exercises, such as structural paper cuts and modeling, can be introduced, as can plays, psychodrama, chorals, and group poetry. All these can lead to psychological adjustment, to a certain self-sufficiency, as the most positive departure toward a social integration. The next step would be adjustment through practical work, such as blind typing and stenotypy; then might come basic mechanical assemblage problems; and, finally, studies of law, sociology, and writing.

The legal framework of the Veterans Administration presents the possibility of the handicapped serviceman's starting and finishing even a university education in four to six years. This should not remain mere suggestion, either for the serviceman or for any other handicapped person. If the present rehabilitation agencies are not yet equipped to do the job, they should collaborate with universities. It may be advantageous sometimes to encourage manual workers to prepare for professional careers. But the reverse process can be just as valid. White-collar workers may be interested in the crafts, in industrial and agricultural work.

In previous literature on rehabilitation, especially during the first World War, the idea of shelter and food production, especially agriculture, was given enthusiastic attention as a key vocation for handicapped veterans. The less attractive and less prosperous rural life, however, did not prove to be a drawing card. The situation is better now. The motorization and electrification of the land, together with the cinema, radio, and television, have changed the aspects of rural life and the problems of work, recreation, and leisure for the farmer. The scientific and technological improvements are spreading, and the farmer, too, has to "catch up" with time. Breeding, egg and soil testing, irrigation, rotating crops, dairy work, would require agricultural assistants and farm organizers even on the smaller farms. A movement such as "veteran aid on every farm" could create nation-wide amelioration projects, better and more economical crops, and a most satisfactory occupation for some of our handicapped soldiers.

In severe cases of psychological disturbances or physical disability, simpler methods and devices based on sensory experiences could be developed, assuming that they are the principal source of "aliveness" and often the incentive for growing alertness. The methods here must be elemental: shocks through basic experiences — tactile (texture, weight, temperature), visual (color, light), and acoustic (noise, music). These should be refined later when normal reactions are or can be established. The number of ways is infinite. Every good therapist can develop his own individual technique and he most probably will so do as particular problems come up. But all possible differentiations of the techniques will have the same goal: the recovery of the physical and psychological balance of the patient, the awakening of his full produc-

(Concluded on page 52)

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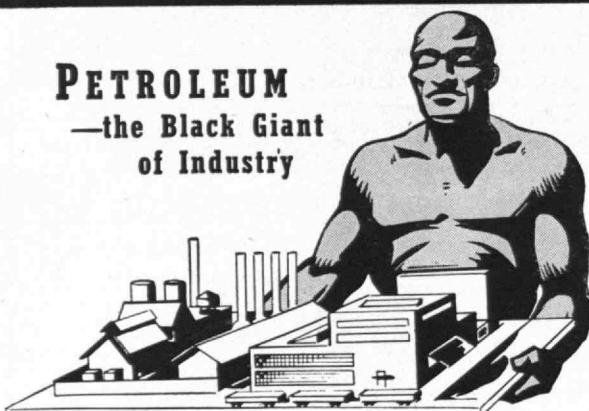
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THE TECHNOLOGY REVIEW

CAMBRIDGE 39
MASS.

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BETTER THAN BEFORE

(Concluded from page 50)

tive capacity. This may give him a self-reliance he never had before. It could create a most positive change in his outlook, a happy dynamic feeling of potential usefulness for practical work. After this first phase of regained confidence, the task of preparing the patient for a vocation will be a relatively easy enterprise.

The educational procedure in a laboratory school such as I describe will be a part of scientific research in rehabilitation. During the training period, experiments would be made and new tests worked out with the students and patients. A number of such tests can be foreseen on the basis of what we already know of projective techniques, such as the play therapy techniques, visual Rorschach tests, and the Harvard picture series. These techniques are generally executed with material brought to the person subjected to the test. The new experiments would follow this type of approach partially; for instance, three-dimensional Rorschach tests can be developed which can be employed as touch stimuli for free associations; tactile charts and constructions can be assembled which utilize related as well as unattached elements for individual interpretation.

The main direction of the experimentation lies, however—as already mentioned—in the new technique whereby the experimental material will be produced by the subject himself in the form of creative exercises. The subjects will solve the tasks given to them *on their own level*, with the minimum of outside influences, the technique emphasizing the freedom of expression as the departure but leading the subjects onward to the goal of purposeful performance.

Because of the dynamic nature of the approach, a number of new tests will be developed as the research progresses. As a result, we may arrive at a new form of psychological research out of which the expression of each individual will appear in an unadulterated purity. Though this may be the way to important psychological findings concerning the handicapped, it is also beyond the scope of immediate urgency. Analyzing the sources and forms of these expressions, we may come to the roots of inventiveness, fantasy, and creative impetus. This knowledge could be applied to handicapped and nonhandicapped people in a new form of vocational guidance.

Vocational guidance with the present aptitude tests gives clues only to the actual, but not the potential, performance of the individual. In fact, stating the negative results of aptitude tests to the subject sometimes has a hypnotic influence upon him. Believing that the judgment is final, he may give up further efforts. The new approach to creative rehabilitation—especially because it requires time—can be understood to constitute an infinitely more promising "aptitude test" than anything we know of at present.

The realization of this research project, or a part of it, requires a well-integrated staff which should be composed of psychiatrist, psychoanalyst, psychologist, occupational-, recreational-, and physio-therapists, technicians, and teachers of the different arts, crafts, and technologies. A broad research can be accomplished within a period of two or three years; the achievement of partial results can be hoped for earlier.



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GOATS, BRANDS, AND THEORIES

(Continued from page 33)

prised, then, to find that the auroral spectrum has been thoroughly explored. More than 100 lines and bands have been charted between 3,000 and 9,000 angstroms. The predominant colors are in the red and green at λ 5,577, λ 6,363, and λ 6,300, and are attributed to impact excitation and ionization of molecular nitrogen and atomic oxygen. These are the only lines ordinarily discernible with a visual spectrometer, but during a brilliant display they can be detected in any part of the sky and even in light reflected from the snow. Vegard, Harang, and others have succeeded in producing in the laboratory all of the principal lines of the auroral spectrum.

The vagaries of radio transmission by way of the ionosphere over paths proximate to the auroral zone have been recognized for some time, and it is reasonable to suppose that active auroras are associated with ionospheric disturbances. Much interesting information has been obtained on this subject through radio-wave exploration of the ionosphere at high latitudes by means of the Breit-Tuve pulse method. Little doubt remains as to the common origin of the aurora and certain types of ionospheric disturbances. Many of our K7 "hams" have, for example, occasionally experienced freak reception on the ultrahigh frequencies, which normally penetrate the reflecting layers, and the chances are that at such times an active auroral display will reward a glance out the window. That signals at times seem impervious to Aurora's charms may be attributed to the fact that large horizontal inhomogeneities in the ionosphere are often present. It is clear then that direction and frequency, in that they determine the location of the signal's last visit to the ionosphere, are important considerations.

The southward extension of the auroral zone — or, rather, of the currents flowing in that zone — during magnetic storms has been established through analysis of magnetic variations observed at widely distributed stations. During great storms, impressive auroral displays are observed even at low latitudes. For example, the photographs of Fig. 1 (page 32) were obtained in New York and New Jersey during the geomagnetic storm of September 18, 1941 — a date probably fixed within the reader's memory by the auroral displays which accompanied the storm as far south as Panama. The corresponding magnetic records for Cheltenham, Md., are reproduced in Fig. 2 (page 33). In high latitudes, proximate to the auroral zone, these magnetic storms are not only of greater severity but also of more frequent occurrence. Agitation of the compass two or three degrees on either side of the normal magnetic meridian may be more or less continuous for several days at a stretch before it again settles down. The magnetic record at College (near Fairbanks), Alaska, for April 3, 1933, during one of the frequent moderate polar storms and one of the numerous auroral photographs obtained at that time are shown in Fig. 3 (page 33).

The often repeated contention that "cold weather brings the aurora" contains, in a manner of speaking, some measure of truth. In winter, when the sky clears, the air chills quickly and the aurora, if present, becomes visible. In fact, near the auroral zone some aurora is present more than 60 per cent of the time — considering only

(Concluded on page 58)

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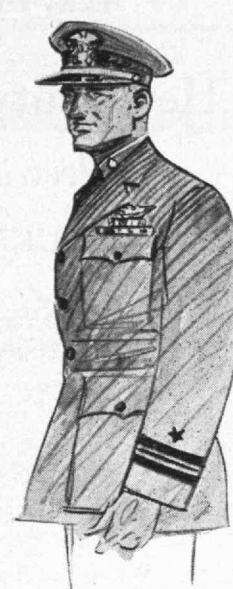
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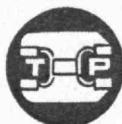
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GOATS, BRANDS, AND THEORIES

(Continued from page 54)

clear, dark hours. Like most geocosmic phenomena, however, auroral activity has its ups and downs. We cannot say that the aurora occurs only at night, since during the day its beauty is overwhelmed. Sunlit auroras have often been observed, however, from points within the earth's shadow. A definite diurnal variation in auroral activity has been established, dependent apparently upon geomagnetic time, with a maximum shortly before local magnetic midnight. We find also other periodicities—one of about 27 days, corresponding approximately to the synodic rotation period of the sun at heliographic latitude 20 degrees, and a secular variation in response to the 11-year cycle in sunspot activity. Seasonal variations, with maxima near the equinoxes, have also been found. All of these periodicities correspond to those established for magnetic activity as the result of continuous records over many years.

The observer most frequently views the aurora as an arc astraddle the magnetic meridian. It appears in the northeast from College, where the east declination is 30 degrees, or in the southwest from Point Barrow, on the polar side of the auroral zone; but, as though responding to some mysterious command, it may with startling rapidity assume various irregular forms—draperies, rays, bands, or corona.

This ballet of the skies that is the aurora, with its unpredictable forms and incredible movements, as yet defies reduction to equations and logic. Its origin still excites the imagination and inspires the philosopher. It is one of those manifestations of physical forces at play with matter which have led the geophysicist to probe the depths and explore the heights in his constant search for additional knowledge of our restricted environment. What more tempting peacetime prospect than a glass-domed igloo in Aurora's realm.

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CONCORD
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WHERE
Printing
IS STILL A CRAFT

THE INSTITUTE GAZETTE

(Continued from page 37)

Professor of Physical Metallurgy, who presented a paper on the nitriding process. Morris Cohen, '33, Associate Professor of Physical Metallurgy, Stewart G. Fletcher, '43, Dara P. Antia, '43, and Paul Gordon, '40, presented joint papers in the session given to the discussion of the tempering of steel.

Other Alumni who read papers at various sessions included Lieutenant John H. Hollomon, '40, of the Watertown Arsenal, who was coauthor of four papers; James R. Cruciger, '39, and Richard F. Miller, '34, both of the United States Steel Corporation; and John W. W. Sullivan, '23, of the industrial division of the Cleveland Ordnance District.

Meeting concurrently in Chicago with the American Society for Metals were three other professional societies, all of which had Technology representatives. The Mordica Memorial Lecture of the Wire Association was given this year by Flint C. Elder, '07, whose subject was "The Wire Drawing Die." Augustus B. Kinzel, '21, of the Union

(Continued on page 60)



Machine tools will also eliminate *this kind of*

FOXHOLE!

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THE INSTITUTE GAZETTE

(Continued from page 58)

Carbide and Carbon Research Laboratories, presided at the weldability session of the American Welding Society. The institute of metals division of the American Institute of Mining and Metallurgical Engineers was represented at a joint regional and metals divisions dinner by its chairman, Cyril S. Smith, '26, who is on leave of absence from the research laboratories of the American Brass Company in order to do special government research. Following the award of his doctorate by M.I.T., Dr. Smith was a research associate on the staff for a year. Participants in the meetings of the iron and steel division of the A.I.M.E. included Karl L. Fettner, '40, of the Carnegie Institute of Technology; Carl M. Loeb, Jr., '28, Vice-president of Climax Molybdenum Company; Walter Crafts, '26, of the Union Carbide and Carbon Research Laboratories; and Lieutenant Hollomon.

Visiting Committee Report

PROGRESS and problems of the Departments and Courses of the Institute are reviewed yearly by the departmental Visiting Committees, whose reports The Review regularly summarizes. Presented below are comments on Technology's work in geology:

THE Committee on the Department of Geology met with Professor Warren J. Mead, Head of the Department, and several members of the staff on May 28. The meeting was necessarily informal, as four members of the

(Concluded on page 62)

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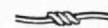
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THE INSTITUTE GAZETTE

(Concluded from page 60)

Committee* could not be present. One is on duty with the armed forces and three were prevented from coming by important war work.

Professor Mead gave to the Committee an outline of the present situation and activities of the Department. Undergraduates studying geology are not eligible for draft deferment, so that undergraduate enrollment in the Department has declined very sharply. No undergraduate courses in geology are to be given for the duration, with the exception of certain subjects given in conjunction with the Courses in Civil Engineering and Metallurgy. This reduces the professional work of the Department virtually to a few courses of undergraduate work and to subjects and courses related to the Graduate School. Five members of the staff of the Department are on leave of absence, engaged in war work. The time of the remaining members of the staff not required for the professional work of the Department has been completely taken in helping to teach special courses required for the large number of men sent to M.I.T. by the Army and Navy.

The suggestion was made that for such matters as location and layout of air fields certain branches of the armed services could well use men with sound geological training.

Under conditions that are likely to exist after the war, the Department will face a widening field of usefulness. Repeated and urgent requests received by the Department indicate a present shortage of trained men. While part of this can no doubt be accounted for by the loss of many qualified men to the armed services, it seems to indicate a greater appreciation of trained geologists by the petroleum and mining industries. While many of the men in the Army and Navy are given special courses which involve training in other branches of engineering and science, such specialized training has not included geology. This fact, with the decline in students electing geology on their own initiative, will result in an increasing scarcity of men trained in this line. Compared with other fields of engineering and science, geology should offer attractive opportunities for students interested in this work.

Further discussion centered around the question of making the opportunities for men trained in geology known to prospective students. The Department has felt that there are many able students who might be interested in the field if they had an adequate opportunity to learn of its possibilities. Carrying the foregoing point beyond its application only to the Department, the Committee expressed their feeling that it would be desirable to devise some procedure that would give each student an opportunity to learn of the fields of activity served by various Courses of study at Technology before he makes his actual selection. The choice of a lifework should be based on more than casual impressions, and an opportunity for the student to learn more in detail about three or four Courses would help him to make a sounder decision.

The Committee expressed appreciation of the way the staff are helping to carry increased burdens of instruction which have come to M.I.T. in the present emergency.

* Members of the Committee for 1943-1944 are Page Golsan, '12, Chairman Bradley Dewey, '09, Henry R. Aldrich, '14, Duncan R. Linsley, '22, Jesse L. Maury, '25, William O. Hotchkiss, and Neil Rice.

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"The empires of the future are empires of the mind . . ."

AMONG the many thought-provoking phrases coined by Winston Churchill, this phrase takes a high place. Its implications are vast; its comprehension of the future is great. It is a phrase which will mean many things to many people. Whatever interpretations are placed upon it, however, one thing is certain. To those "empires of the future," technology and science will be of greater importance than ever before.

The contributions made by M.I.T., its staff, and its Alumni toward the winning of this war are many and varied. Their full import cannot now be gauged. Technology, however, is giving ample proof of the basic soundness of its long-established policies and methods. In the hour of our nation's greatest emergency, it is justifying the confidence and faith placed in it by its early founders and its later friends.

In the postwar world, in a world of "empires of the mind," Technology must accept ever greater responsibilities. A sound institution today, it must gain added strength if it is to discharge its obligations with maximum effectiveness. In one aspect of its future, that of increased financial strength, the M.I.T. Alumni Fund will play an important part. Our goal of a \$100,000 net annual gift to the Institute represents the income on an increase in endowment of almost two and a half million dollars. Technology's responsibility is ours. It is one in which all of us can share.

At the Halfway Mark . . .

in the Technology Clubs Sweepstakes it was Western Penn by a nose! In fact, as they roared into the stretch, the four leading entries were practically blanketed. During the summer the leader had come up from third, passing both Philadelphia and Rhode Island, while Buffalo had pulled into sixth place.

In general, the Technology Clubs are well ahead of the alumni body as a whole, six of them exceeding the over-all "per cent of contributors" figure, five ahead in average amount of contribution. The Philadelphia Club's average of \$17.30 is outstanding.

Here's the way they looked on September 30:

	Per cent of Contributors*	Average Contribution
Western Pennsylvania	51	\$13.60
Rhode Island	48	14.90
Philadelphia	47	17.30
Northern New Jersey	41	13.70
Cincinnati	28	10.40
Buffalo	24	15.90
Central Pennsylvania	20	9.90
Dallas	16	9.00
Alumni body as a whole	22	12.30

*Based on number of active members.

M.I.T. MEN AT WAR

Up to September 18 over 4,900 Institute Alumni, including 15 Admirals, one Commodore, and 57 Generals, were recorded as being in the active military or naval services of the United Nations. New additions to the list of Alumni in the High Command include Commodore William A. Sullivan '17, Brigadier General Albert F. Hegenberger '17, Brigadier General Albert J. Browning '22, Brigadier General William E. R. Covell, 2d, '23, and Brigadier General George F. Schulgen '30. To date 33 Alumni have received military decorations.

Beginning with the November, 1942, issue, The Review has included a listing of "M.I.T. Men at War." Corrections and additions to this list will be published in future issues. As a matter of convenience, promotions and corrections in the rank previously given are included under a single heading "Changes in Rank." The Review Editors are greatly indebted to the many Alumni and other readers who are continuing to co-operate so helpfully in reporting inevitable errors of omission and commission which they note in these listings.

Alumni are urged to write to their friends in the services. Letters addressed care of the Alumni Association, M.I.T., will be forwarded.

NEW DECORATIONS

1920 Ellsberg, Edward, *Capt.*, U.S.N., Legion of Merit for rehabilitation of the Massawa Naval base in Eritrea.
 1921 ★Healy, Howard R., *Lt. Comdr.*, U.S.N., Purple Heart, posthumously, as damage control officer on the *U.S.S. Lexington*.
 1923 Randall, Russell E., *Brig. Gen.*, U.S.A., Bronze Oak Leaf Cluster to Air Medal.
 1924 Doolittle, James H., *Maj. Gen.*, U.S.A., Distinguished Service Medal as commanding general of the Northwest African Strategic Air Force.
 1926 Warburton, Ernest K., *Col.*, U.S.A., Distinguished Flying Cross for valor and extraordinary success in test flights.
 1928 Kelsey, Benjamin S., *Col.*, U.S.A., Air Medal for flying P-38 over Atlantic; Distinguished Service Medal for "exceptionally meritorious service" in engineering work on the P-38. Also awarded Distinguished Flying Cross in 1938.
 1934 ★Emery, Robert M., *Lt.*, U.S.A., Distinguished Service Cross, posthumously for leadership and gallantry in action in North Africa.
 1937 Kiley, Thomas J., *Lt.*, U.S.A., Purple Heart in North Africa.
 1938 ★Mills, Charles R., *Capt.*, U.S.A., Legion of Merit.
 1939 Pope, Gordon A., *Capt.*, U.S.A., Silver Star and Croix de Guerre.
 1942 Candy, William R., *Lt.*, U.S.A., Distinguished Flying Cross and Air Medal for exploits over Kiska.
 Fraser, Wilton M., *Capt.*, U.S.A. Air Medal for operational air flights "during which exposure to enemy fire was probable and expected."
 ★Kelley, Charles F., Jr., *Capt.*, U.S.A., Silver Star and Cluster for gallantry in action in North Africa.

COMMENDATIONS

1935 Daley, Walter R., *Lt.*, U.S.N., for "outstanding devotion to duty" as officer of Naval armed guard on a merchant ship subjected to bombing.

NEW LISTINGS U.S.A.

1907 Leavell, John H., *Col.*
 1911 VanHovenberg, Henry W., *Lt. Col.*
 1914 Karns, Frederick P., *Maj.*
 1916 Lewis, Chester F., *Maj.*
 1917 Robinson, Clark, *Capt.*
 1919 Maloy, Charles B., *Capt.*
 Sheeline, Paul D., *Col.*
 Strang, James M., *Lt. Col.*
 1921 Diechmann, Gustav H., *Sgt.*
 Mintz, Nathan L., *2nd Lt.*
 1922 MacKintosh, Charles D., *Maj.*
 Strauss, Sydney M., *Pvt.*
 1923 Drazen, Michael, *Lt.*
 Kirchner, Oswald, *Capt.*
 Wolf, Ejnar I., *Sgt.*
 Ferre, Luis A., *Lt.*
 Russell, Edmund E., *Lt. Col.*
 Tracy, Henry M., *Capt.*
 Walker, Hugh L., *Capt.*

1925 Erickson, Edwin T., *Capt.*
 Niles, Philip C., *Capt.*
 Gleason, Isaac W., *Maj.*
 Houghton, Russell L., *Pvt.*
 Thomas, Cecil A. P., *Capt.*
 Evans, Nathan G., *Capt.*
 Fexy, George D., *Lt.*
 Cole, Joseph H., *Sgt.*
 Krummel, Robert L., *Capt.*
 Root, Howard S., *Capt.*
 Sakouta, Vitaly M., *Pvt.*
 1929 Wolbarsht, Archie, *2nd Lt.*
 Batchelder, Donald F. P., *Pvt.*
 1930 Fasce, Egi V., *1st Lt.*
 Reeder, William S., *Capt.*
 Rudnick, Louis E., *2nd Lt.*
 Sahud, Eugene L., *Pvt.*
 Tyson, James Jr., *Capt.*
 Garcia, Marcelino, *Maj.*
 Harrison, William D., *Maj.*
 Luke, Charles D., *1st Lt.*
 Snyder, Robert M., *Capt.*
 Weaver, Donald B., *Capt.*
 Condie, Churchill C., *T/3/c*
 Glowa, L. William, *Lt.*
 Hoyle, Frederick B., Jr., *2nd Lt.*
 Hurd, C. Judson, *Corp.*
 Johnston, George H., *2nd Lt.*
 Person, Leland S., *2nd Lt.*
 Talcott, Agnew A., *1st Lt.*
 Yohn, Albert K., *1st Lt.*
 Bradley, Charles T., *Capt.*
 Di Stefano, Joseph, *Corp.*
 Groff, John T., *2nd Lt.*
 Hopkins, John R., *Capt.*
 Hunner, John S., *Capt.*
 Liberfarb, Benjamin, *Pvt.*
 Lloyd, Edmund H., *Capt.*
 Longley, John F., *Capt.*
 Love, Robert M., *Col.*
 Manley, Kirtland, *Pvt.*
 Roberts, Elton N., *Pvt.*
 Spencer, Alvin R., *T/Sgt.*
 Stearns, Charles B., *Capt.*
 Bassinor, Ben L., *Maj.*
 Bullock, Donald S., *Capt.*
 Carten, Lee A., *Maj.*
 Cary, Arthur, *1st Lt.*
 Fentress, Carroll D., *Capt.*
 Iantosca, Angelo, *Capt.*
 Lindley, George W., *Capt.*
 McKeever, Halfred L., *1st Lt.*
 Spreen, William F., Jr., *1st Lt.*
 Clahane, James H., Jr., *1st Lt.*
 Eastmond, Charles C., *Corp.*
 Francisco, Damon E., *Capt.*
 Hunt, John W., *Pvt.*
 Leavitt, S. Trowbridge, *M/Sgt.*
 Michel, Norman K., *Sgt.*
 Rapoport, Emanuel, *Pvt.*
 Steinhurst, William A., *1st Lt.*
 1937 Barrett, Frank J., *Pvt.*
 Janson, Harry W., *Corp.*
 McHugh, William P., *Lt.*
 Wimans, Robert C., *1st Lt.*
 Fisk, Robert R., *Capt.*
 Lappin, Paul W., *Lt.*
 Morse, David L., *Pvt.*
 O'Connell, Paul, *Capt.*
 Seiwel, Harry R., *Maj.*
 Jaffe, Herbert, *Pvt.*
 Pope, Gordon A., *Capt.*
 Rebor, Andrew P., *Maj.*
 Roberts, Simon M., *A/C*
 Samuel, Richard M., *T/Sgt.*
 Seifert, Charles G., Jr., *Pvt.*
 Barron, Julian M., *Pvt.*
 Berges, John A., *Lt.*
 Bushoff, Harry, *Capt.*
 Dewey, Bradley, Jr., *1st Lt.*
 *Hurley, Henry W., *Lt. Col.*
 Johnson, Malcolm E., *Lt.*
 Keitel, Edmund E., *Pvt.*
 Sharpe, Myer, *Pvt.*
 Young, Manoog S., *Pvt.*
 Zimmerman, Robert M., *Capt.*
 1941 *Cooke James H., *Lt.*
 ★Doughten, William S., Jr., *Lt.*
 Goldstein, Walter L., *Lt.*
 Harper, Bertram, *T/5/c*
 King, Louis A., *2nd Lt.*
 Kopp, Anatole, *Pvt.*
 Lancina, Ernest N., *Lt.*
 McClellan, George R., *Pvt.*
 Muller, Lawrence J., *T/Sgt.*
 Parker, Karr, Jr., *2nd Lt.*
 Seltzer, Kenneth P., *Cadet*
 Smith, Atwell J., *Capt.*
 Sullivan, Richard D., *2nd Lt.*
 Surowsky, Alan E., *Lt.*
 Thompson, Frederick H., *Pvt.*
 Baltimore, David M., *2nd Lt.*
 Beatty, Charles G., *2nd Lt.*
 Campbell, Edward S., *Corp.*
 Card, Francis C., *A/C*
 Epstein, Charles, *Pvt.*
 Graham, Arthur, *2nd Lt.*
 Le Bolt, John M., *1st Lt.*
 Malloch, James A., Jr., *2nd Lt.*
 Mitchell, David B., *Pvt.*
 Russell, Richard E., *1st Lt.*
 Russell, Trent S., *2nd Lt.*
 Shaw, Robert S., *Pvt.*
 Acker, Nathan H., *2nd Lt.*
 Allen, Floyd R., *Sgt.*
 Biel, Eugene E.
 Bill, Audrey A., *1st Lt.*
 Blom, Trygve, *2nd Lt.*
 Brewster, Spencer H., *A/C*
 Cale, Theodore Jr., *A/C*
 Cardarelli, Arnold J., *A/C*
 Cauble, Mark W., Jr., *Lt.*
 Charles, Raymond A., *Pvt.*
 Cole, Richard J., *A/C*
 Comey, Howard W., *O/C*
 Conklin, Stanley B., *2nd Lt.*
 Cooper, William C., Jr., *Pvt.*
 Cotter, John F., *A/C*
 Croan, Leonard S., *Pvt.*
 Crocker, Ernest C., Jr., *Capt.*
 Crook, Sydney L., *Capt.*
 Curtis, Reuel W., *Lt.*
 Dahmer, Henry R., *Corp.*
 Dreyer, Harold E., *Pvt.*
 Duval, Lee E., *2nd Lt.*
 Elliott, Duncan M.D., *A/C*
 Ellis, Philip C., *A/C*
 Fleming, Lamar, 3d, *A/C*
 Fogg, Clarence H., *Pvt.*
 Foley, John X., *Corp.*
 Ford, Laurence M., *Pvt.*
 Goodman, Joseph, *Lt.*
 Grandstaff, Roland, *A/C*
 Guild, Walter A., Jr., *A/C*
 Hahn, John A., *O/C*
 Harsch, John E., *Pvt.*
 Hazzard, Stephen B., *2nd Lt.*
 Helbig, John D., *A/C*
 Hendel, James N., *1st Lt.*
 Herzog, Frederick C., Jr., *2nd Lt.*
 Heydt, Howard L.
 Hodsdon, George M., Jr., *Capt.*
 Holt, James, Jr.
 Horner, Carroll G., *A/C*
 Hunt, Bridgford, *Pvt.*
 Jenkins, Cornelius A.
 Johnson, James H., *2nd Lt.*
 Julier, Bertram H., *Lt.*
 Kemp, Clinton C., *Pvt.*
 Kittredge, William R., *Pvt.*
 Korfhage, Robert S., *T/Sgt.*
 Lee, Munny Y. M.
 Lehr, Carlton G., *2nd Lt.*
 Lydotes, George A., *A/C*
 Maletskos, Constantine J., *Pvt.*
 Miller, Andrew J., *Pvt.*
 *Miller, Daniel B., *2nd Lt.*
 Mitchell, Robert L., *Lt.*
 Moore, William B., *2nd Lt.*
 Morton, Charles I., Jr., *2nd Lt.*
 Mulhaupt, Frederick K., *2nd Lt.*
 Parker, Hugh
 Polena, Jordan R., *1st Lt.*
 Pool, William G., *2nd Lt.*
 Pugh, Milton E., *A/C*
 Reckseit, Bernard S., *2nd Lt.*
 Robinson, Gwynn H., *Lt.*
 Roboff, Stanley B.
 Sackheim, Sherman P., *2nd Lt.*
 Saunders, William G., *2nd Lt.*
 Schultz, Morton L., *Pvt.*
 Schwartz, Louis D., Jr., *Lt.*
 Scola, William G., *Corp.*
 Spindel, Fritz, *Sgt.*
 Sprenger, David F., *A/C*
 Steen, Stephen N., *O/C*
 Stewart, Joseph T. J., *Pvt.*
 Sullivan, William J., Jr., *A/C*
 Verrooch, William A., *O/C*
 Warner, Lewis C., *2d, A/C*
 Wilson, Richard D., *A/C*
 Young, Henry T., *2nd Lt.*
U.S.N.
 Lundquist, Arthur D., *Lt. Comdr.*
 Morton, Samuel E., Jr., *Lt.*
 Roberts, Elliott B., *Lt. Comdr.*
 Rowell, Fred M., *Lt.*
 Willard, Lawrence L., *Lt.*
 Freeman, William W. K., *Lt.*
 Wasserman, Arthur L., *Lt.*
 Ball, Charles G., *Lt.*
 Chamberlin, Clarence V., *Lt. Comdr.*
 Lippincott, Harlow H., *Lt.*
 Pasiley, William P., *Lt.*
 Pomykala, Edmund S., *Lt.*
 Plant, Curtis, *Lt.*
 Tourtellotte, Ralph N., *C.P.O.*
 White, Harrison G., *Comdr.*
 Burns, George L., *Lt.*
 Lee, Edward M., *Lt. Comdr.*
 Marshall, L. Gray, *Lt.*
 Clarke, Allen G., *Lt.*
 Thrasher, Irving D., *Lt. Comdr.*
 1928 Farnsworth, John G., *Comdr.*
 McAfee, John K., *Lt.*
 Rudolph, Robert P., *Lt.*
 Sharkey, Thaddeus L., *Lt.*
 Holdridge, Charles F., *Lt. (j.g.)*
 Houck, William G., *Lt. (j.g.)*
 Chindblom, Richard N., *Lt. (j.g.)*
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 Osgood, Wendell M., *Lt. (j.g.)*
 Twelves, Charles M., Jr., *Lt. (j.g.)*
 Randall, Henry D., Jr., *Lt. (j.g.)*
 Wood, James D., *Lt.*
 1932 Brady, George J., *Lt. (j.g.)*
 Brownyard, Theodore L., *Lt. (j.g.)*
 Castlemann, Melvin, *Lt. (j.g.)*
 Chaplik, Alexander C., *Lt. (j.g.)*
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 Knochel, Raymond F., *Lt.*
 Leto, Joseph, *Lt.*
 Liehr, Herman W., *Lt. (j.g.)*
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 Millard, Maxwell D., *Lt.*
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 Stein, Laurence B., *Ens.*
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 Dee, Leo H., *Lt. (j.g.)*
 Gulden, Horace B., *Lt.*
 Hatch, Frank R., *Ens.*
 Meakin, John B., *Lt.*
 Coffin, John J., *Ens.*
 Cooper, John M., *Ens.*
 Doggett, Towers, *Lt.*
 Essley, Harry E., Jr., *Ens.*

		U.S.M.C.	
1941	Thompson, James F., Jr., <i>Maj.</i> to <i>Lt. Col.</i> Van Sciver, Wesley J., <i>Lt.</i> to <i>Capt.</i> Zeamer, Jay, Jr., <i>Capt.</i> to <i>Maj.</i> Aronson, Carl N., <i>Cadet</i> to <i>2nd Lt.</i> Backer, Stanley, <i>Lt.</i> to <i>Capt.</i> Butt, Charles S., Jr., <i>Lt.</i> to <i>Capt.</i> Clark, George W., <i>Lt.</i> to <i>Capt.</i> Fish, David H., <i>Lt.</i> to <i>Capt.</i> Fletcher, Arthur A., Jr., <i>Capt.</i> to <i>Maj.</i> Healey, James F., <i>Lt.</i> to <i>Capt.</i> Kraft, Raymond H., <i>Lt.</i> to <i>Maj.</i> Kussmaul, William G., Jr., <i>Lt.</i> to <i>Capt.</i> March, Eugene A., <i>Lt.</i> to <i>Capt.</i> Morrison, Howard A., Jr., <i>Lt.</i> to <i>Capt.</i> Morton, Walter E., Jr., <i>A/C</i> to <i>2nd Lt.</i> Myers, Joseph H., <i>Lt.</i> to <i>Capt.</i> Nolen, Jake T., <i>Lt.</i> to <i>Capt.</i> Rapkin, Maurice, <i>Lt.</i> to <i>Capt.</i> Rudd, Thayer, <i>Lt.</i> to <i>Capt.</i> Sligar, James S., <i>Lt.</i> to <i>Capt.</i> Spengler, Kenneth C., <i>Lt.</i> to <i>Maj.</i> Stewart, Carlton M., <i>Corp.</i> to <i>Sgt.</i> Whitaker, Fred H., <i>Lt.</i> to <i>Capt.</i> Williams, Robert S., <i>Lt.</i> to <i>Capt.</i> Baresel, Karl G., <i>1st Lt.</i> to <i>Capt.</i> Benjamin, Jack R., <i>Lt.</i> to <i>Capt.</i> Bridge, Richard H., <i>2nd Lt.</i> to <i>1st Lt.</i> Drew, Cecil E., <i>2nd Lt.</i> to <i>Capt.</i> Fraser, Wilton M., <i>2nd Lt.</i> to <i>Capt.</i> Hotte, Alphonse P. L., <i>Cadet</i> to <i>2nd Lt.</i> Katz, Maurice N., <i>2nd Lt.</i> to <i>1st Lt.</i> Kelly, Joseph B., <i>Corp.</i> to <i>Cadet</i> King, Frederick M., <i>Cadet</i> to <i>Lt.</i> Levene, Martin B., <i>1st Lt.</i> to <i>Capt.</i> Longacre, Arthur M., <i>1st Lt.</i> to <i>Capt.</i> McCord, Claude M., Jr., <i>1st Lt.</i> to <i>Capt.</i> Moseley, Elwyn A., <i>2nd Lt.</i> to <i>1st Lt.</i> Miller, William H., <i>1st Lt.</i> to <i>Capt.</i> Quinn, John J., <i>2nd Lt.</i> to <i>1st Lt.</i> Russell, Richard E., <i>2nd Lt.</i> to <i>1st Lt.</i> Schloemer, Robert W., <i>2nd Lt.</i> to <i>Capt.</i> Seaton, William B., <i>A/C</i> to <i>2nd Lt.</i> Shane, Presson S., <i>2nd Lt.</i> to <i>Capt.</i> Shuman, Frederick G., <i>2nd Lt.</i> to <i>Capt.</i> Small, William A., <i>A/C</i> to <i>2nd Lt.</i> Traupe, William F., <i>2nd Lt.</i> to <i>Capt.</i> 1943 Downing, John F., <i>A/C</i> to <i>2nd Lt.</i>	<p>1917 Sullivan, William A., <i>Capt.</i> to <i>Commo.</i> 1921 Malone, William J., <i>Comdr.</i> to <i>Capt.</i> Preston, Kendall, <i>Lt. Comdr.</i> to <i>Comdr.</i> 1922 Nicholson, Charles A., <i>Lt. Comdr.</i> to <i>Capt.</i> Colvin, Oliver D., <i>Lt.</i> to <i>Comdr.</i> 1925 Butler, Theodore H., <i>Lt.</i> to <i>Lt. Comdr.</i> Cunniff, James F., <i>Lt. Comdr.</i> to <i>Comdr.</i> 1926 Esling, Thomas A., <i>Lt. Comdr.</i> to <i>Comdr.</i> 1927 Finch, Volney C., <i>Lt.</i> to <i>Lt. Comdr.</i> Whitgrove, Leland D., <i>Lt.</i> to <i>Capt.</i> Williams, Milo R., <i>Comdr.</i> to <i>Capt.</i> 1928 Estes, Norman C., <i>Lt.</i> to <i>Lt. Comdr.</i> McClintic, William S., <i>Lt.</i> to <i>Lt. Comdr.</i> O'Brien, Timothy J., <i>Comdr.</i> to <i>Capt.</i> Riley, Frederic D., Jr., <i>Lt.</i> to <i>Lt. Comdr.</i> Wegforth, John F., <i>Lt. Comdr.</i> to <i>Capt.</i> Clexton, Edward W., <i>Lt.</i> to <i>Capt.</i> Glisson, Charles O., <i>Lt. Comdr.</i> to <i>Comdr.</i> Kilian, Edward D., <i>Lt.</i> to <i>Lt. Comdr.</i> 1930 Rehler, Joseph E., <i>Lt.</i> to <i>Lt. Comdr.</i> 1931 Stiegler, Oscar, <i>Lt. Comdr.</i> to <i>Comdr.</i> 1933 Brooke, Russell J., <i>Lt.</i> to <i>Lt. Comdr.</i> Pearson, Gordon C., <i>Ens.</i> to <i>Lt. (j.g.)</i> Smyth, John B., <i>Lt.</i> to <i>Lt. Comdr.</i> 1934 Watts, Charles R., <i>Lt.</i> to <i>Comdr.</i> Jackson, Foster R., <i>Lt.</i> to <i>Lt. Comdr.</i> Miller, Henry C., Jr., <i>Lt.</i> to <i>Lt. Comdr.</i> Soule, Rufus A., <i>Lt.</i> to <i>Lt. Comdr.</i> 1935 Fry, W. Gregg, <i>Ens.</i> to <i>Lt. (j.g.)</i> 1936 Davison, Frederick A., <i>Lt.</i> to <i>Lt. Comdr.</i> Pierce, Ransom A., <i>Lt.</i> to <i>Lt. Comdr.</i> Saffer, Charles M., Jr., <i>Lt. (j.g.)</i> to <i>Lt.</i> Van Sant, Ralph W., Jr., <i>Ens.</i> to <i>Lt. (j.g.)</i> 1937 Schilling, August H., <i>Ens.</i> to <i>Lt. (j.g.)</i> Church, Joseph H., <i>Ens.</i> to <i>Lt.</i> Curts, Charles A., <i>Lt.</i> to <i>Lt. Comdr.</i> Kerkian, Aram, <i>Ens.</i> to <i>Lt. (j.g.)</i> Viles, Frederick J., Jr., <i>Ens.</i> to <i>Lt. (j.g.)</i> 1939 Finkelstein, Irving, <i>Ens.</i> to <i>Lt. (j.g.)</i> Haible, William, <i>Ens.</i> to <i>Lt. (j.g.)</i> Haley, Thomas B., <i>Lt.</i> to <i>Lt. Comdr.</i> Pastene, Robert W., <i>Ens.</i> to <i>Lt. (j.g.)</i></p> <p style="text-align: right;"><i>U.S.N.</i></p> <p>1911 De Florez, Luis, <i>Comdr.</i> to <i>Capt.</i> 1913 Leonard, Morris M., <i>Comdr.</i> to <i>Capt.</i></p>	<p>Smith, Edwin K., Jr., <i>Ens.</i> to <i>Lt. Wilkinson, Earl B., Jr., Ens.</i> to <i>Lt.</i> 1940 Barton, Alfred P., <i>Lt. (j.g.)</i> to <i>Lt. Creamer, Thomas F., Ens.</i> to <i>Lt. (j.g.)</i> Freeman, Charles W., <i>Ens.</i> to <i>Lt. Jackson, Dugald C., 3d, Ens.</i> to <i>Lt. (j.g.)</i> Johnstone, David M., <i>Ens.</i> to <i>Lt. (j.g.)</i> Lindsey, Mason B., <i>Ens.</i> to <i>Lt. (j.g.)</i> Mahoney Joseph L., <i>Ens.</i> to <i>Lt. (j.g.)</i> Maas, Leo, Jr., <i>Ens.</i> to <i>Lt. (j.g.)</i> Reynolds, James R., <i>Lt.</i> to <i>Lt. Comdr.</i> Rosenfeld, George, <i>Ens.</i> to <i>Lt. Thompson, Ralph N., Ens.</i> to <i>Lt. (j.g.)</i> 1941 Bowman, Joseph S., <i>Ens.</i> to <i>Lt. (j.g.)</i> Compton, Wilson M., Jr., <i>Ens.</i> to <i>Lt.</i> Gandola, Frank V., <i>Ens.</i> to <i>Lt. Griffin, John G., Jr., Ens.</i> to <i>Lt. James, Stephen W., Ens.</i> to <i>Lt. Moody, Muller P., Ens.</i> to <i>Lt. Sieglauff, William B., Lt.</i> to <i>Lt. Comdr.</i> Wade, Howard W., <i>Lt. (j.g.)</i> to <i>Lt.</i> 1942 Andrews, Richard, <i>Ens.</i> to <i>Lt. (j.g.)</i> Canney, Frank C., <i>Ens.</i> to <i>Lt. (j.g.)</i> Chappelle, Robert N., <i>Ens.</i> to <i>Lt. (j.g.)</i> Hill, Gordon H., <i>Ens.</i> to <i>Lt. (j.g.)</i> McKee, Andrew I., Jr., <i>Ens.</i> to <i>Lt. (j.g.)</i> Lovelace, Richard S., <i>Ens.</i> to <i>Lt. (j.g.)</i> Loven, Nila O. J., <i>Ens.</i> to <i>Lt. (j.g.)</i> McGinnis, Carl L., <i>A.C.</i> to <i>Ens.</i> Monro, Sutton, <i>Ens.</i> to <i>Lt.</i> O'Neil, Philip M., <i>Ens.</i> to <i>Lt. (j.g.)</i> Owen, Robert I., <i>Ens.</i> to <i>Lt. (j.g.)</i> Richardson, T. W. Gilmer, <i>Ens.</i> to <i>Lt. (j.g.)</i> Shrewsbury, Raymond W., <i>Ens.</i> to <i>Lt. (j.g.)</i> Small, Richard B., <i>Ens.</i> to <i>Lt. Swenson, Kneeland, Ens.</i> to <i>Lt. (j.g.)</i> Trexel, Carl A., Jr., <i>Ens.</i> to <i>Lt.</i> Turner, Filo H., <i>Ens.</i> to <i>Lt. (j.g.)</i> Tucker, George E., <i>Ens.</i> to <i>Lt. (j.g.)</i> Vyverberg, Robert G., <i>Ens.</i> to <i>Lt. (j.g.)</i> 1943 Czar, Edward J., <i>Mid.</i> to <i>Ens.</i> Hoyt, Edmund D., <i>Mid.</i> to <i>Ens.</i> Lord, Edwin R., <i>Mid.</i> to <i>Ens.</i> Stewart, Lawrence E., <i>S.1c</i> to <i>Ens.</i> 1940 Phannemiller, George M., <i>Lt. Comdr.</i> to <i>Comdr.</i></p>
		CANADA	
		Army	
		SOUTH AFRICA	
		Army	
		1925 Bateman, Glen L., <i>Capt.</i> to <i>Maj.</i>	
		RANK NOT PREVIOUSLY PUBLISHED	
		1933 Scott, Kenneth B., <i>C.M.M.</i> , U.S.M.C. 1934 McCallum, Angus, <i>W.O.</i> , U.S.M.C. 1939 Marshall, Howard D., <i>Capt.</i> , U.S.A. 1943 Horst, Bruce E., <i>2nd Lt.</i> , U.S.A. Lenznel, Israel, <i>Ens.</i> , U.S.N. Milman, Alan M., <i>2nd Lt.</i> , U.S.A. Perry, Frederick G., Jr., <i>2nd Lt.</i> , U.S.A. Reese, Jack W., <i>2nd Lt.</i> , U.S.A. Scott, Howard H., <i>Ens.</i> , U.S.N.	
		CASUALTIES	
		1917 †O'Brien, Thomas F., <i>Comdr.</i> , U.S.N.; Japan (previously reported "Missing in Action" in Philippines). 1934 †Parker, Frank C., Jr., <i>Maj.</i> , U.S.A.; New Guinea, November 25, 1942. 1938 Mills, Charles R., <i>Capt.</i> , U.S.A.; North Africa, July 28, 1943. 1940 †Hurley, Henry W., <i>Lt. Col.</i> , U.S.A.; Sicily, July 14, 1943. †Pollak, Edward G., <i>Ens.</i> , U.S.N.; Tokyo. 1941 *Adelson, Horace J., <i>Lt.</i> , U.S.A.; Wright Field, July 9, 1943. *Cooke, James H., <i>Lt.</i> , U.S.A.; Japanese prison camp. ★Doughten, William S., Jr., <i>Lt.</i> , U.S.A.; Sicily, July 10, 1943. †Fulton, Robert B., <i>2d Lt.</i> , U.S.N.; Zentsuji War Prison Camp, Japan. †Logsdon, Thomas M., U.S.N.; New Guinea, January 7, 1943. 1942 *Stampfer, David W., <i>Lt.</i> , U.S.N.; Jacksonville, May 16, 1943. 1943 Jenkins, Cornelius A., U.S.A.; Northwestern European Area, February 4, 1943. †Miller, Andrew, Jr., <i>Pvt.</i> , U.S.A.; Philippines.	

ALUMNI IN THE HIGH COMMAND

U.S.A.

1907	Fredendall, Lloyd R., <i>Lt. Gen.</i>
	Godfrey, Stuart C., <i>Brig. Gen.</i>
1909	Blood, Kenneth T., <i>Maj. Gen.</i>
1911	Kenney, George C., <i>Lt. Gen.</i>
	Spalding, Sidney P., <i>Maj. Gen.</i>
	Weeks, Lawrence B., <i>Brig. Gen.</i>
1913	Gardner, Fulton Q. C., <i>Maj. Gen.</i>
	Jones, Albert M., <i>Maj. Gen.</i>
1914	Waitt, Alden H., <i>Brig. Gen.</i>
	Wood, John E., <i>Brig. Gen.</i>
1915	Gillespie, Alexander G., <i>Brig. Gen.</i>
1916	Boatwright, Walter P., <i>Brig. Gen.</i>
	Harms, Henry W., <i>Brig. Gen.</i>
	Hyde, James F. C., <i>Brig. Gen.</i>
1917	Groves, Leslie R., <i>Brig. Gen.</i>
	Hegenberger, Albert F., <i>Brig. Gen.</i>
	Kingman, Allen F., <i>Brig. Gen.</i>
	Williford, Forrest E., <i>Brig. Gen.</i>
1920	Bradshaw, Aaron, Jr., <i>Brig. Gen.</i>

1921	Allen, Harvey C., <i>Brig. Gen.</i>
	Baylies, James, <i>Brig. Gen.</i>
	Carroll, Franklin O., <i>Brig. Gen.</i>
	Donovan, Richard, <i>Maj. Gen.</i>
	Lull, George F., <i>Brig. Gen.</i>
	Moses, Raymond G., <i>Brig. Gen.</i>
	Murray, Maxwell, <i>Maj. Gen.</i>
	Noce, Daniel, <i>Brig. Gen.</i>
	Quinton, Alfred B., <i>Brig. Gen.</i>
	Scott, Stanley L., <i>Brig. Gen.</i>
	Shindler, Don G., <i>Brig. Gen.</i>
	Worsham, Ludson D., <i>Brig. Gen.</i>
1922	Browning, Albert J., <i>Brig. Gen.</i>
	Dunkelberg, Wilbur E., <i>Brig. Gen.</i>
	Heavey, William F., <i>Brig. Gen.</i>
	Hoge, William M., <i>Brig. Gen.</i>
	Howard, Clinton W., <i>Brig. Gen.</i>
	Johns, Dwight F., <i>Brig. Gen.</i>
	Styer, Wilhelm D., <i>Maj. Gen.</i>

1923	Chavin, Raphael S., <i>Brig. Gen.</i>
	Christmas, John K., <i>Brig. Gen.</i>
	Covell, William E. R., <i>2d Brig. Gen.</i>
	Randall, Russell E., <i>Brig. Gen.</i>
	Reimel, Stewart E., <i>Brig. Gen.</i>
	Safford, Hermon F., <i>Brig. Gen.</i>
1924	Doolittle, James H., <i>Maj. Gen.</i>
	Henry, Stephen G., <i>Maj. Gen.</i>
	McSherry, Frank J., <i>Brig. Gen.</i>
	Wells, Gordon M., <i>Brig. Gen.</i>
	Holman, Jonathan L., <i>Brig. Gen.</i>
1925	Daniels, Wilmot A., <i>Brig. Gen.</i>
	Gardner, Grandison, <i>Brig. Gen.</i>
	Schulgen, George F., <i>Brig. Gen.</i>
1926	Loucks, Charles E., <i>Brig. Gen.</i>
1928	Kabrich, William C., <i>Brig. Gen.</i>

Canadian Army

1913	Young, James V., <i>Maj. Gen.</i>
1896	Hamlet, Harry G., <i>Rear Adm.</i>
	U.S.C.G.
	1901 Whitman, Ralph, <i>Rear Adm.</i>
	Furer, Julius A., <i>Rear Adm.</i>
	Willson, Russell, <i>Vice Adm.</i>
1907	Land, Emory S., <i>Rear Adm.</i>
	Ryden, Roy W., <i>Rear Adm.</i>
	Van Keuren, Alexander H., <i>Rear Adm.</i>
1909	Howard, Herbert S., <i>Rear Adm.</i>
1913	Smith, Edward H., <i>Rear Adm.</i>
1914	Richey, Thomas B., <i>Rear Adm.</i>
1915	Brand, Charles L., <i>Rear Adm.</i>
1917	Pace, Ernest M., Jr., <i>Rear Adm.</i>
	Sullivan, William A., <i>Commo.</i>
1920	Cochrane, Edward L., <i>Rear Adm.</i>
1921	Vickery, Howard L., <i>Rear Adm.</i>
1925	Durgin, Calvin T., <i>Rear Adm.</i>

★ Killed in Action.

† Missing in Action.

‡ Prisoner of War.

* Died in Service.

** Wounded.

ALUMNI AND OFFICERS IN THE NEWS

Laurel Wreaths

¶ To WILLIAM C. POTTER '97, who was elected president of the New York Clearing House Association.

¶ To LESTER D. GARDNER '98, who was awarded the honorary degree of doctor of laws by the Polytechnic Institute of Brooklyn in June.

¶ To LLOYD R. FREDENDALL '07, a lieutenant general, who has been appointed commander of the Second Army of the United States. General Fredendall, who has seen active service in both World War I and World War II, has his headquarters in Tennessee.

¶ To BRADLEY DEWEY '09, a colonel, who has been appointed national rubber director. Colonel Dewey had been deputy rubber director.

¶ To CHARLES CAMSELL '09, who has been named Canadian co-director of the North Pacific planning project of the Joint Economic Committees of the United States and Canada. Dr. Camsell is deputy minister of Canada's Department of Mines and Resources.

¶ To JOHN W. NICKERSON '09, who is director of the newly established management consultant division of the War Production Board. This division will advise on management practices to promote effectiveness in war production.

¶ To MARCUS A. GROSSMANN '11, who has been elected president of the American Society for Metals.

¶ To LUCIAN W. BURNHAM '14, a colonel in the Marine Corps, from the city of Londonderry, Ireland. Colonel Burnham was presented a shillelagh and a scroll recording the city's "warm appreciation of the courteous and friendly manner in which, during your stay amongst us, you have carried out your duties. . . . The physique and discipline of the men under your command won the admiration of all."

¶ To WILLIAM R. HAINSWORTH '21, who has been named chairman of the Industrial Research Institute.

¶ To BERNARD E. PROCTOR '23, who has been appointed director of subsistence research of the research and development branch of the Office of the Quartermaster General.

¶ To VLADIMIR HAENSEL '37, who, with Professor V. M. Ipatieff, perfected a process to manufacture "trip-tane," a new airplane supergas which boosts engine power 50 per cent over that of engines burning 100-octane gasoline. According to Dr. Gustav Egloff, President of the American In-

stitute of Chemists, the new fuel would give Allied planes a superiority in speed, climbing power, and lifting power which would put enemy planes as much "at their mercy as if they were roosting pigeons." Dr. Haensel and Professor Ipatieff evolved a method of manufacture that would make possible the sale of triptane for about \$1.00 a gallon. Several years ago, the commercial price was estimated at approximately \$3,000 a gallon.

On the Contents Page

¶ By KARL T. COMPTON, President, "Organization of American Scientists for the War," *Science*, July 23 and July 30.

¶ By CLAUDE S. McGINNIS '06, "The Tone Quality of the Boehm Clarinet," *Journal of the Acoustical Society of America*, April.

¶ By EDWIN W. JAMES '07, "Vital Link of the Americas," *Excavating Engineer*, May and June.

¶ By THOMAS C. DESMOND '09: "We Can Curb Tooth Decay," *Saturday Evening Post*, April 24; "Vitamins for War Workers?" *Occupational Hazards*, May; "Women Can Save the School-Lunch Program," *Ladies' Home Journal*, September.

¶ By JOHN MILLS '09, "Unavoidable Transients," *Bell Laboratories Record*, August.

¶ By RALPH W. HORNE '10, "Cranton, Rhode Island, Builds New Sewerage Works for 53,000 People," *Journal of the Boston Society of Civil Engineers*, April.

¶ By BERTHOUD C. BOULTON '16, "Coordinating Standards Work with Design and Production," *Product Engineering*, September.

¶ By RICHARD H. FRAZIER '23, "Examinations," *Journal of Engineering Education*, April.

¶ By JOHN E. NICHOLAS '26, "Some Preliminary Investigations on Dehydration of Fruits and Vegetables with Infrared Energy," *Journal of the Franklin Institute*, September.

¶ By PETER J. GAYLOR '27, "Possibilities in Post-War Patent Law Unification," *Journal of the Patent Office Society*, May.

¶ By EVERETT D. HOWE '27, "Training Women for Engineering Tasks," *Mechanical Engineering*, October.

¶ By HERMON H. SCOTT '30, "The Noise Primer," *General Radio Experimenter*, January through July.

¶ By MARGARET P. HAZEN '32, "An Engineering School Library in Wartime," *Library Journal*, May 15.

¶ By H. ARTHUR ZIMMERMAN '37, "Performance Quality Control in the Manufacture of Hydraulic Parts," *Aero Digest*, December.

Speechmakers

¶ WILLIAM D. COOLIDGE '96, who spoke on "Peacetime Salvage from Wartime Research," before a meeting of the Dental Society of the State of New York in Syracuse on May 19.

¶ CHARLES L. GABRIEL '12, who told of research management methods in medium-sized companies which have problems similar to those of larger plants, at a symposium on research management in small laboratories, at the American Chemical Society's 106th meeting in Pittsburgh on September 6.

¶ HAROLD F. DODGE '16, who spoke on sampling inspection of continuous production, at a joint meeting of the American Society of Mechanical Engineers and the Institute of Mathematic Statistics in May.

¶ RAYMOND STEVENS '17, who discussed employment of consultants possessing specialized knowledge that could be obtained by the individual company only at a prohibitive cost, at the research management symposium of the American Chemical Society in Pittsburgh.

¶ EDWARD P. WARNER '17, who delivered the annual Wilbur Wright Memorial Lecture before the Royal Aeronautical Society in London. Mr. Warner was elected to honorary fellowship in the Royal Aeronautical Society. He is the fifth American to receive such election in the society's history. The four previously elected were Lester D. Gardner '98, Jerome C. Hun-saker '12, Theodore P. Wright '18, and Orville Wright.

¶ EDWIN S. BURDELL '20, who delivered an address on "Post-War Education in a Post-War World," at the Wisconsin X Club forum during the 90th commencement week end of the University of Wisconsin in May.

¶ PER K. FROLICH '23, President of the American Chemical Society, whose presidential address at the society's annual meeting on September 6 was entitled, "Petroleum — Past, Present, and Future." COLONEL BRADLEY DEWEY '09 spoke on "The Synthetic Rubber Program — Present and Future," at the same meeting.

¶ ROBERT H. CAMERON, staff, who spoke on "Absolutely Convergent Trigonometric Sums," at the 395th meeting of the American Mathematical Society, held at Hunter College.

KKARL DEUTSCH, staff, who gave a radio talk on behalf of Czechoslovakia over Station WEEI in Boston on September 3. Dr. Deutsch is a member of the National Alliance. His address was entitled, "Fighting Hitler for Five Years—America's Czechoslovak Ally."

Tribute in the Press

CTO ALFRED P. SLOAN, JR., '95, in the Detroit *News* of May 15. Mr. Sloan began his career in the automobile industry by selling roller bearings. For the last 20 years he has been president of General Motors.

CTO PAUL W. LITCHFIELD '96, in the Cincinnati *Enquirer*. Mr. Litchfield, called Goodyear's "man of many horizons," is considered by his associates to be, more than any other man, responsible for keeping alive the art of building and flying lighter-than-air ships. His vision and hard work have been responsible for many of Good-year's outstanding contributions to the development of rubber, and his factories are today turning out in great quantities important materials to help win the war.

CTO JOHN C. KINNEAR '07, in the Salt Lake City *Tribune*. Mr. Kinnear, who has attained a position of importance in the mining industry, started at the bottom of the copper milling and smelting field and through a combination of high technical qualifications and managerial ability has contributed greatly to advances in the mining and smelting industry.

CTO COLONEL WILLARD F. ROCKWELL '08, in the Washington, D. C., *Times-Herald*, for his outstanding success at his job as director of production for the United States Maritime Commission.

CTO DONALD W. DOUGLAS '14, in the Washington, D. C., *News*, for his great contributions to the aviation industry. The full story of Mr. Douglas and his career are told in *Sky Master*, a book written by Frank Cunningham and published by Dorrance.

CTO LEWIS W. DOUGLAS '17, in the New York *Post*. Mr. Douglas, who is adviser to REAR ADMIRAL EMORY S. LAND '07, chairman of the War Shipping Administration, is praised for his political tenacity and Americanism.

CTO CLARK ROBINSON '17, Army captain, in the Rochester, N. Y., *Democrat and Chronicle*. Captain Robinson went from Broadway, where he designed gay night clubs and produced elaborate stage productions, to a fighter base overseas, where he helps American soldiers put on shows to keep up the morale of our fighting men.

CTO JOHN NOLEN, JR., '20, in the Washington, D. C., *Times-Herald*. Mr. Nolen is director of planning for the National Capital Parks and Planning

Commission and is largely responsible for the invariable comment of newcomers that Washington is a beautiful city.

On the Title Page

CGEORGE E. RUSSELL '00, *Hydraulics*, fifth edition, Henry Holt.

CALFRED S. NILES '17, with JOSEPH S. NEWELL '19, *Airplane Structures*, two volumes, Wiley.

CEDITH CLARKE '19, *Circuit Analysis of A-C Power Systems*, Volume I, Wiley.

CROBERT S. HARRIS '28, with Kenneth V. Thimann, editors, *Vitamins and Hormones*, Academic Press.

CTHOMAS H. COE, JR., '29, *Building Estimators' Manual*, Coe and Company.

CRAYMOND C. BINDER '30, *Fluid Mechanics*, Prentice-Hall.

CWILLIAM H. TIMBIE, staff, *Basic Electricity for Communications*, Wiley.

DEATHS

* Mentioned in class notes.

CDANIEL M. WHEELER '68, September 29.*

CJULIEN W. VOSE '83, August 3.*

COLIVER G. RICKETSON '84, May 16.

CFRANK E. SANDS '85, July 10.*

CWILLIAM W. VARNEY '86, July 30.

CCHARLES H. GARDNER '87, August 10.*

CERNEST B. MOORE '88, May 1.

CCHARLES G. RICE '88, July 29.

CCLARENCE G. NORRIS '89, August 1.* (See 1890 notes.)

COSCAR W. PICKERING '89, August 31, 1942.

CFRED A. COLE '91, August 25.*

CDOUGLAS A. CATER '92, July 13.*

CFREDERIC H. HARVEY '92, May 25.*

CRICHARD B. SNOW '92, December 16.*

CWILLIAM H. GRAVES '93, September 19.

CALBERT S. MOULTON '93, September 13.*

CWALTER I. SWANTON '93, June 22.*

CFREDERIC A. WALLACE '93, May 24.*

CWILLIAM H. BOVEY '94, April 26.*

CMABEL H. CHAPIN '94, November 3, 1942.*

CROBERT S. WESTON '94, July 29.*

CTHOMAS W. BAILEY '96, November 18, 1942.*

CSTANLEY HOWLAND '96, September 21, 1942.*

CVANCE C. OSMONT '96, February 8.*

CFREDERICK H. PRATT '96, July 7.*

CHERBERT C. WALDO '96, February 18.*

CFREDERICK H. WALKER '96, June 2.*

CFRANK H. KEISKER '97, August 19.*

C SALMON W. PUTNAM '3D, '97, July 12.*

CJOHN C. SOLEY '97, July 4.*

CHERBERT L. COBB '98, January 24.*

CWINFRED D. HUBBARD '98, August 14.*

CRICHARD MOMMERS '98, June 18.*

CEDWARD W. ROAF '98, February 1.*

CMARY B. PEQUIGNOT '99, September, 1942.

CMORGAN BARNEY '00, June 22.*

CHARRY H. HAMLEN '00, February 14.*

CWILLIAM R. HURD, 2D, '00, July 21.*

CB. GOULD MACINTIRE '00, May 6.*

CROY H. BOLSTER '01, September 8.

CWALTER A. READ '01, April 30.

CWALTER O. TEAGUE '02, July 30.*

CCHARLES W. BEVERSTOCK '03, March 13.*

CNOEL CHAMBERLIN '04, August 15.*

CCARL KING '04, June 25.*

CANDREW O. MILLER '04, May 13.*

CHENRY C. SCHAEFER '04, November 11, 1942.*

CFREDERICK J. SCHWARZ '05, June 14, 1942.

CALBERT W. WALKER '05, June 15.*

CWILLIAM H. BALLS '06, February 3.*

CHENRY B. HALLOWELL '06, May 13.*

CDAVID S. WEIL '06, August 25, 1941.*

CROY F. GALE '07, July 26.*

CHOWARD G. MCVAY '07, January.*

CG. EDWARD PROUTY '07, September 7.*

CPAUL A. ESTEN '08, August 13.*

CJOHN C. GAYLORD '08, June 2.*

CHERBERT T. GERRISH '08, September 6.*

CGEORGE E. MCKERNAN '09, May, 1942.

CRUTH O. PIERSON '09, September 12.

CARNOLD C. DAVIES '10, November 26, 1942.

CDAVID J. MCGRATH '12, September 12.*

CW. ARNOLD HOUSER '15, May 4.*

CLEROY R. BYRNE '16, April 12.*

CGEORGE R. WHITE '18, May 25.*

CSTANTON H. BREED '19, June 18.*

COSCAR S. MARTINSON '19, 1942.

CGUSTAF B. BENGTSON '20, May 10.*

CALBERT V. SMITH '20, October 8.

CWHITNEY K. AVERY '21, June 5.*

CMONTGOMERY KNIGHT '22, July 25.*

CCHARLES M. TUCKER '22, June 9.*

CALBERT I. GOULD '23, January 8.

CEDWARD W. HOLLISTER '23, June 19, 1942.*

CJAMES P. SULLIVAN '24, June 8.

CCHARLES G. SCHMIDT '26, April 5.

CKENNETH R. SHAW '26, July 27.*

CEMIL O. MALMQUIST '28, September 27, 1942.

CRAYMOND G. BRAY '29, June 25.

CTHOMAS H. GRACE '30, August 12, 1942.*

CR. LYTHE DEMING '31, March 20.

CFREDERIC F. HOLMES '31, June 16.

CMORTON H. KANNER '36, June 10.

CEARLE R. WOODFALL, JR., '36, May.

CCHARLES R. MILLS '38, July 28.*

CCLAY P. DO AMARAL '40, September, 1942.

CHENRY W. HURLEY '40, July 14.*

CHORACE J. ADELSON '41, July 9.*

CWILLIAM S. DOUGHTEN '41, July 10.*

NEWS FROM THE CLUBS AND CLASSES

CLUB NOTES

Chemists Convene

At the meeting of the American Chemical Society in Pittsburgh in September, the group of M.I.T. Alumni had their regular get-together. They met at a social hour in the club rooms of the Engineers Society of Western Pennsylvania at the William Penn Hotel. More than 100 Alumni attended. Many members of the Pittsburgh M.I.T. club came to greet the chemists. Nicholas A. Milas, Associate Professor of Chemistry at M.I.T., was present as a representative of the Institute.

The following list of those who attended the meeting was prepared by Raymond Stevens '17 and Lawrence H. Flett '18: Hermann C. Lythgoe '96, director of the food and drug division, Massachusetts Department of Public Health, Boston, Mass.; W. Edgar Reed '97, consulting engineer, Pittsburgh, Pa.; Edwin M. Lines '05, director of research, Bird and Son, East Walpole, Mass.; William S. Wilson '07, director of research, Merrimac division, Monsanto Chemical Company, Everett, Mass.; Charles L. Gabriel '12, Vice-president, Pucker Commercial Alcohol Company, Philadelphia, Pa.; Paul V. Faragher '13, metallurgist, Aluminum Company of America, Pittsburgh, Pa.; Elbridge J. Casselman '15, Mellon Institute of Industrial Research, Pittsburgh, Pa.; Frank Maguire '17, manager of industrial and defense division, Reichhold Chemicals, Inc., Elizabeth, N.J.; Raymond Stevens '17, Vice-president, Arthur D. Little, Inc., Cambridge, Mass.; Julian M. Avery '18, Vice-president, Diamond Alkali Company, Cleveland, Ohio; Lawrence H. Flett '18, group leader, National Aniline division, Allied Chemical and Dye Corporation, Buffalo, N.Y.; Raymond G. Lafear '19, planning consultant, Home Life Insurance Company, Pittsburgh, Pa.; Frank P. Reynolds '19, chief chemist, Bird and Son, Inc., East Walpole, Mass.; Alan G. Richards '19, sales manager, Dewey and Almy Chemical Company, Cambridge, Mass.; Leighton B. Smith '19, Lever Brothers Company, Cambridge, Mass.; Lauren B. Hitchcock '20, manager sales division, Hooker Electrochemical Company, Niagara Falls, N.Y.; Frederick W. Adams '21, chemical engineer, Pittsburgh Plate Glass Company, Pittsburgh, Pa.; Thomas W. Bartram '21, research chemist, Monsanto Chemical Company, Nitro, W.Va.; John J. Healy, Jr., '21, director of development, Merrimac division, Monsanto Chemical Company, Boston, Mass.; Willard M. Mobley '21, chief chemist, Alabama By-Products Corporation, Tarrant, Ala.; Ralph H. Price '21, director of research, Pan American Refining Corporation, Texas City, Texas; Joseph J. Schaefer '21, Vice-president, Sharples Chemicals, Inc., Philadelphia, Pa.; Harold F. Stose '21, Owens-Illinois Glass Company, Toledo, Ohio; F. Reed Dallye '22, Aluminum Company of America, Pitts-

burgh, Pa.; Leo Sheldovsky '22, research physical chemist, Colgate-Palmolive-Peet Company, Jersey City, N.J.; Thomas E. Shepherd '22, district manager, Cities Service Oil Company, Pittsburgh, Pa.; Herman A. Bruson '23, Rohm and Haas, Inc., Philadelphia, Pa.

Paul J. Culhane '23, patent attorney, E. I. du Pont de Nemours and Company, Wilmington, Del.; Howard W. Dexter, Jr., '23, director of power and steam, Duquesne Light Company, Pittsburgh, Pa.; William H. Harding '23, director of technical sales and development division, American Cyanamid Company, Stamford, Conn.; Robert H. Kean '23, technical director, Virginia-Carolina Chemical Corporation, Richmond, Va.; Gilbert N. Reed '23, attorney, Westinghouse Electric and Manufacturing Company, Pittsburgh, Pa.; Lawrence D. Schmidt '23, senior chemist, United States Bureau of Mines, Pittsburgh, Pa.; Eugene L. Chappell '24, Cemline Corporation, Cheswick, Pa.; Charles M. Boardman '25, electrical engineer, Duquesne Light Company, Pittsburgh, Pa.; Rufus N. Palmer '25, industrial fellow, Mellon Institute of Industrial Research, Pittsburgh, Pa.; Wilbur W. Criswell, Jr. '26, fuel consultant, United Eastern Coal Sales Corporation, New York, N.Y.; Wesley C. L. Hemeon '26, ventilation engineer, Industrial Hygiene Foundation of America, Mellon Institute of Industrial Research, Pittsburgh, Pa.; Norman C. Hill '26, director of research and development, Pittsburgh Coke and Iron Company, Pittsburgh, Pa.; Reginald L. Wakeman '26, industrial fellow, Mellon Institute of Industrial Research, Pittsburgh, Pa.; Arthur G. Connolly '27, lawyer, Wilmington, Del.; Warren D. Smith '27, Carnegie-Illinois Steel Corporation, Bradford Woods, Pa.; Richard D. Hoak '28, senior fellow, Mellon Institute of Industrial Research, Pittsburgh, Pa.; Milton Male '29, research engineer, United States Steel Company, Pittsburgh, Pa.; Leonard Stievater, Jr., '29, chemical engineer, Merck and Company, Inc., Rahway, N.J.; George E. Barker '30, senior industrial fellow, Mellon Institute of Industrial Research, Pittsburgh, Pa.; Paul T. Jones '30, research chemist, American Bemberg Corporation, Elizabethton, Tenn.; Sanford A. Moss, Jr., '30, research chemist, American Viscose Company, Marcus Hook, Pa.; Anthony R. Savina '30, research chemist, E. L. Patch Company, Stoneham, Mass.; Alan W. Vint '30, chief engineer, Vanity Fair Silk Mills, Reading, Pa.; Whitney Weinrich '30, principal petroleum technician, Petroleum Administration for War, Washington, D.C.; William E. Yelland '30, research chemist, Corn Products Refining Company, Argo, Ill.

Daniel A. Cook '31, foreman, chemical laboratory, North American Rayon Corporation, Elizabethton, Tenn.; Fred Ebersole '31, technical divisional manager, General Aniline Works, Delmar, N.Y.; Henry Grinsfelder, senior chemist, Resinous Products and Chemical Company, Philadelphia, Pa.; J. Whitney Perry '31, ballistician, bal-

listic research laboratory, Aberdeen Proving Ground, Md.; Harry L. Johnson '32, assistant purchasing agent, Westinghouse Electric and Manufacturing Company, Pittsburgh, Pa.; Robert B. Semple '32, assistant development director, Monsanto Chemical Company, St. Louis, Mo.; Edward R. Atkinson '33, assistant professor of chemistry, University of New Hampshire, Durham, N.H.; Scott H. Foster '34, research chemist, Monsanto Chemical Company, Everett, Mass.; Lawrence A. Monroe '34, Executive Secretary, chemical refining board, War Production Board, Washington, D.C.; William L. Abramowitz '35, director of research, American Resinous Chemicals Corporation, Peabody, Mass.; Robert K. Kennedy '35, Union Carbide and Carbon Corporation, New York, N.Y.; Philip H. Rhodes '35, resin research director, Pennsylvania Coal Products Company, Petrolia, Pa.; Virgil W. Ware '35, assistant sales manager, plastic division, Rohm and Haas Company, Philadelphia, Pa.; James B. Allen '36, War Production Board, Washington, D.C.; Arthur E. Bearse '36, Battelle Memorial Institute, Columbus, Ohio; Leonard B. Chandler '36, research chemist, E. I. du Pont de Nemours and Company, Wilmington, Del.; Max Bender '37, chemist, Aridy Corporation, New York, N.Y.; Vladimir Haensel '37, research chemist, Universal Oil Products Company, Riverside, Ill.; Peter G. R. Kolupaev '37, Kendall Mills, Walpole, Mass.; William G. Hockberger '37, Standard Oil Company of Louisiana, Baton Rouge, La.; Donald F. Holloway '38, research chemist, Swift and Company, Chicago, Ill.; William S. McClenahan '38, senior industrial fellow, Mellon Institute of Industrial Research, Pittsburgh, Pa.; Frederick E. Ray '38, chemical engineer, Socony-Vacuum Oil Company, Paulsboro, N.J.; Robert York, Jr., '38, assistant professor, Carnegie Institute of Technology, Pittsburgh, Pa.; Raymond L. Arnett '39, research chemist, Reichhold Chemicals, Inc., Elizabeth, N.J.

Howard H. Reynolds '39, chemical engineer, Davison Chemical Company, Baltimore, Md.; Margaret Dienes '40, research chemist, Ridbo Laboratories, Paterson, N.J.; Milton Green '40, research chemist, S.M.A. Corporation, Chagrin Falls, Ohio; William M. Hearon '40, assistant chief gas officer, Office of Civilian Defense, Washington, D.C.; F. Charles Moesel '40, Aluminum Company of America, New Kensington, Pa.; Henry Rapoport '40, chemist, Heyden Chemical Corporation, Garfield, N.J.; Charles E. Slyngstad '40, fuel engineer, M. W. Kellogg Company, Jersey City, N.J.; G. Worden Waring '40, assistant professor, Tulane University, New Orleans, La.; William M. Bowes '41, research chemist, American Cyanamid Company, Stamford, Conn.; Lowell L. Fellinger '41, research chemical engineer, Monsanto Chemical Company, St. Louis, Mo.; John P. Sanderson '41, assistant to director of research, Mine Safety Appliances Company, Pittsburgh,

Pa.; Ralph C. Swan '41, senior research chemist, Pure Oil Company, Skokie, Ill.; Arthur W. Weber '41, plant manager, Corning Glass Works, Charleroi, Pa.; John L. Collins '42, department manager, Corning Glass Works, Charleroi, Pa.; David G. Edwards '42, Carnegie Institute of Technology, Pittsburgh, Pa.; Nicholas A. Milas, Associate Professor of Chemistry, M.I.T., Cambridge, Mass.

Somewhere Overseas

The following report of a meeting held by Technology Alumni stationed somewhere overseas was sent in by Alphonse J. Graffeo '39, a captain in the Army Ordnance Department.

On the evening of September 8, a group of Alumni stationed in this region held a meeting at the Officers' Club. The purpose of the get-together was to give Bion A. Bowman '09 a send-off from these parts.

The meeting started with liquid refreshments in the lounge at 1900 hours. These were followed by a delicious steak dinner with plenty of side dishes. Throughout and following the dinner, many incidents from our school days were brought to light. Bowman had to leave early, and the rest of the party adjourned to the apartment of Major S. H. Walters '33. Last year Bowman could not make our meeting, and this year Edward R. Marden '41, a lieutenant, was unable to attend.

Everyone present agreed that if they were here next year, they would hold another meeting. The following men attended: Bion A. Bowman '09, R. J. Murphy '14, John W. Beretta '23, Charles H. Conroy '28, Stanley H. Walters '33, Norman K. White '36, and Alphonse J. Graffeo '39.

M.I.T. Association of Buffalo

The Association held a dinner meeting at Mac-Doel's Restaurant on Thursday, June 24. Election of officers was the primary purpose of the meeting, and the following were put into office for the coming year: President, Joseph R. Ryan '31, 100 Orchard Place, Williamsville, N.Y.; Vice-president, Marvine Gorham '93, 133 Hodge Avenue, Buffalo, N.Y.; Secretary-Treasurer, Thomas H. Speller '29, 1338 West Avenue, Buffalo, N.Y.

Lester Hoyt entertained the group with an interesting talk on the subject, "Detergents as Applied to Industrial Cleaning." The discussion after his talk indicated a wide interest on this subject among engineers. — ROGER S. BROOKMAN '35, *Retiring Secretary*, 212 McKinley Building, 259 Delaware Avenue, Buffalo, N.Y. THOMAS H. SPELLER '29, *Secretary*, 1338 West Avenue, Buffalo, N.Y.

Technology Club of Cincinnati

The annual dinner meeting was held at the University Club on Friday evening, May 7. Guest speaker for the dinner was Professor B. A. Thresher '20, Director of Admissions at M.I.T., who gave an interesting and timely talk on present conditions and future plans at Technology. Of special interest were Professor Thresher's comments on the present program with the Army and Navy, the conduct of special research, and the various conditions affecting the present enrollment.

Two reels of excellent colored movies of Technology were shown, bringing those present up to date on the building developments and extracurricular activities at the Institute. These pictures were ably projected by John F. Dreyer '29.

The following guests of the Club were present: Professor Thresher; B. B. Thresher; Charles Ottermann, superintendent of the Hughes High School; B. M. Hanna, superintendent of the Norwood High School; Elmer W. Kizer, superintendent of the Hartwell High School; and L. P. Stewart, superintendent of the Walnut Hills High School.

The nominating committee, headed by Fred W. Morrill '07, proposed the following officers for the ensuing year: President, Frederick W. Garber '03; Vice-president, John C. Todd '23; Treasurer, Oliver L. Bardes '21; and Secretary, Eric O. Moorehead '37. The Secretary was instructed to cast a unanimous ballot for these officers.

The following Alumni attended the meeting: Morten Carlisle '90, Moritz Sax '96, Achilles H. Pugh, Jr., '97, Walter H. Lee '98, Rudolph Tietig '98, Walter L. Rapp '00, Frederick W. Garber '03, William B. Fogarty '04, Henry D. Loring '07, Stuart R. Miller '07, Fred W. Morrill '07, Howard B. Luther '08, Clarence H. Spiehler '08, Joseph B. Stewart, Jr., '08, William V. Schmiedeke '12, Charles F. Cellarius '16, Arthur S. Neave '16, Frank S. Krug, Jr., '17, Kenneth A. Wright '19, Carleton E. Alexander '20, Oliver L. Bardes '21, Merrill A. Youtz '21, John S. Rafferty '22, Francis W. Spalding '22, John C. Todd '23, Alexander C. Brown '25, Alfred Kullman '25, James L. Suydam '26, John F. Dreyer '29, G. Ridgley McDaniel '29, George F. Schatz '30, Stephen J. Alling '33, Edward S. Coe '33, Wilfred J. Pucke '34, Eric O. Moorehead '37, John Sullivan, Jr., '38, Robert V. Sternberg '39, Walter G. Thomas '39, Carl M. Cooper '40, and George E. Power '41. — ERIC O. MOOREHEAD '37, *Secretary*, Post Office Box 203, Rural Route 1, Cincinnati 27, Ohio.

Technology Club of Northern Texas

The Club held its June meeting on Saturday, the 26th, at the Dallas Athletic Club. Twenty-one members turned out to hear Armand Abrams '24, director of research for the Magnolia Petroleum Company, give a 30-minute address on "Human Ecology and its Application in the Field of Research and Development Activities." Dr. Abrams was born, reared, and educated in Antwerp, Belgium, and before coming to M.I.T. received his degree from the University of Brussels. He has been associated with Du Pont and with the Tennessee Valley Authority before coming to the Magnolia Petroleum Company, where he has been in full charge of research work since 1937. He gave a most enlightening talk on the many aspects of this most interesting work, and those present felt that they had gained a new insight into a field relatively new to industry in this section of the country.

At a business session of the meeting, a discussion was held on Senate bills 607 and 702, sponsored by Senator Harley M. Kilgore of West Virginia, wherein it was proposed that all scientific development and research, and scientific and technical personnel in the United States, be organized and pooled under the direction of one bu-

reau for the furtherance of the present war and the promotion of peace thereafter. The concensus of opinion of those present was that industrialists, scientists, engineers, and others have shown by their past cooperation that they are fully capable of rendering all aid possible to the government in times of war or other emergencies, and that their activities can be better left to private industry and private endeavor, rather than pooled and incorporated under one bureau controlled by governmental regulation. In line with this opinion, a committee, consisting of William P. Bentley '04, chairman, Jonathan A. Noyes '12, and Newman B. Gregory '04, was authorized and appointed to draft proper resolutions showing the position of the Club toward the proposed legislation.

Thirteen members attended the meeting on July 31. In view of the 48-hour work week order recently promulgated for certain essential industries, a number of our most active and faithful members were prevented from attending, but those present gave a most enthusiastic reception to the address of William P. Bentley '04, president of the Uvalde Construction Company, who gave a talk on "Curious Psychic Experiences," a most enlightening diversion from the usual technical discussions.

At a business session, the committee presented the resolution opposing Senate bills 607 and 702. The resolution was unanimously adopted and copies of same were authorized to be sent to our United States Senators and Representatives with the request that they use their best efforts to defeat this proposed legislation.

The August luncheon meeting was held at the Dallas Athletic Club on Saturday, the 28th. The attendance dropped to ten members, but these made an enthusiastic and earnest audience for Thomas E. Huffman '23, district engineer of the Texas Highway Department, in his discussion of postwar highway plans for Texas. While all but essential construction and repairs have been curtailed for the duration, the state highway department has been very active in preparation of plans for postwar construction. Federal legislation has made provision for additional postwar aid to the states for such construction, with definite provisions for certain types of roads. Provision has also been made for engineering and planning and, with this aid in view, most of the states are active in their preparation for the future work. In Texas, in particular, plans have been made for the construction of new superhighways and improvement of old ones, linking all parts of the state with first-class highways and developing lateral and connecting roads where needed. Plans are well along and, unless the war ends unexpectedly soon, the state will be in a position to start on the new work immediately upon cessation of hostilities.

Announcement was made that election of officers was scheduled for the September meeting. — E. G. SENTER, JR., '17, *Secretary*, 210 Construction Building, Dallas 1, Texas.

Technology Club of Hartford

On June 1, the Club held its annual meeting, combined with servicemen's and ladies' night, at the Hotel Bond in Hartford.

Forty members and guests were present. After an excellent chicken dinner, the business meeting was opened by President A. S. LaPenta '22. The report of the Secretary-Treasurer was tendered and accepted as read. Frederick O. A. Almquist '23, Horace B. Tuttle '21, and Norman J. Vile '16 were appointed a committee to arrange the annual outing.

The report of the nominating committee, composed of Edwin C. Alden '95, chairman, Thomas D. Green '26, and John H. L. Giles '29, was the next item of business. The officers nominated and unanimously elected were Frederick O. A. Almquist '23, President; Horace B. Tuttle '21, J. P. F. Pilkinson '27, Norman J. Vile '16, Charles E. Mongan, Jr., '23, and Myron F. Burr '32, Vice-presidents in charge of attendance, publicity, entertainment, programs, and hospitality; Louis J. Proulx, Jr., '36, Secretary-Treasurer; and John A. Swift '27, Assistant Secretary-Treasurer; Arthur F. Peaslee '14, representative to the Alumni Council; and Franklin S. Atwater '38 and Ferrari P. Ward '26, governors for one and two years respectively. Class representatives for 1942-1943 were re-elected.

Following the business meeting, Mr. S. B. Gammell, well-known Hartford radio news analyst, made his regular evening broadcast direct from the meeting. He then addressed the Club on the subject "News Developments from the War Fronts."

The annual outing was held on June 19 at Goodwin Park in Hartford. In spite of rationing difficulties, the committee did a fine job of arranging the picnic-style dinner. The usual sports were enjoyed, although, much to our regret, transportation difficulties made it impossible to have the Springfield and New Haven clubs with us this year. Sixteen members and guests were present. — LOUIS J. PROULX, JR., '36, *Secretary*, 31 Wells Road, West Hartford, Conn. JOHN A. SWIFT '27, *Assistant Secretary*, Corner Park and Laurel Streets, Hartford, Conn.

Technology Club of New York

Applications for membership have been received from the following Alumni: Philip B. Sadtler '06, chemical engineer, Birmingham, Ala.; Edmund S. Parsons '16, master mechanic, Republic Steel and Tubes Corporation, Brooklyn, N.Y.; Pierre F. Lavedan '20, President, the Liquid Carbonic Corporation, 405 Lexington Avenue, New York, N.Y.; Clarence W. Perkins '22, production manager, Megowen Educator Food Company, 1515 Willow Avenue, Hoboken, N.J.; John H. Teeter '22, chief technical aide to the chairman of the National Defense Research Committee, 1530 P Street, Northwest, Washington, D.C.; F. Willett Walton, Jr., '22, Young and Rubicam, 285 Madison Avenue, New York, N.Y.; Charles E. Roche '23, chemist, Merck and Company, Rahway, N.J.; Frank B. Dyer '26, 4220 Northwest Second Street, Miami, Fla.; Harold F. Porter '28, Connecticut General Life Insurance Company, 225 Broadway, New York, N.Y.; William A. Brown, Jr., '31, sales manager, Liquid Carbonic Corporation, 405 Lexington Avenue, New York, N.Y.; Samuel I. Omansky '40, chemist, John De Kuyper and Son, Inc., 812 Jersey Avenue, Jersey City, N.J.; and James F. Hoey, Jr., '43, Wright Aeronautical Corporation, Paterson, N.J.

The Class of 1914, with Charles P. Fiske acting as chairman, held their annual dinner at the Club. Over 22 turned out for a most enjoyable evening. — The Class of 1922, one of the most active of all classes at the Club, held a dinner, which 35 attended.

Our new golf champion for 1943 is Lawrence B. Davis '22. In spite of the lack of automobile transportation, over 50 enthusiastic golfers, bridge players, and just good fellows turned out for the fifth annual golf tournament, held this year at the Scarsdale Golf Club. It would seem that in spite of our war effort, a "day in the country" is still appreciated and welcome. — WILLIAM D. NEUBERG '17, *Secretary*, 24 East 39th Street, New York, N.Y. WILLIAM L. KEPPLINGER, JR., '24, *Publicity Committee*, care of Johns-Manville, 22 East 40th Street, New York, N.Y.

M.I.T. Club of Western Pennsylvania

The annual meeting of the Club was held at the University Club in Pittsburgh on July 21. President Ralph M. Ferry '12 called the meeting to order at 8:30 p.m.

The nominating committee, consisting of Howard W. Dexter, Jr., '23, chairman, Elbridge J. Casselman '15, Millard M. Greer '26, Elmer A. Holbrook '04, and Joshua C. Whetzel '17, presented a list of nominations for officers for the ensuing year. The following were unanimously elected: F. Reed Dallye '22, President; Joseph H. Cox '23, Vice-president; Theodore W. Bossert '20, *Secretary*; Edwin M. Barnes '23, Assistant Secretary for Membership; Gilbert N. Reed '23, Treasurer; and Howard L. Bodwell '98, Raymond G. Lafear '19, and Fred W. Waterman, Jr., '25, elective members of executive committee. Mr. Ralph Ferry, retiring President, serves ex officio on the committee, as specified by the bylaws. — A motion was approved to thank the outgoing officers for their efforts.

On September 7, the Club was cosponsor of an M.I.T. social hour with the American Chemical Society. The occasion was the annual convention of the society, which kept the William Penn Hotel active for a week. Reginald Wakeman '26 handled the details for both the Club and the chemists, with the excellent result that 109 Alumni gathered for conversation and cocktails. — FRED W. WATERMAN, JR., '25, *Retiring Secretary*, Carnegie-Illinois Steel Corporation, 1304 Carnegie Building, Pittsburgh, Pa. THEODORE W. BOSSERT '20, *Secretary*, Aluminum Company of America, 801 Gulf Building, Pittsburgh, Pa. EDWIN M. BARNES '23, *Membership Secretary*, Carnegie-Illinois Steel Corporation, Bureau of Production Planning, Fifth Avenue, Pittsburgh, Pa.

Technology Club of Puget Sound

A meeting of the Club was held at the home of H. W. McCurdy '22 on Friday evening, August 20. The group began to gather shortly after 5 p.m., and it was nearly midnight before our guest of honor, Dean H. E. Lobdell '17, was safely back at the University Club.

To our readers the above statements might seem to constitute a satisfactory report on the meeting. To those present they would seem a monument to gross understatement.

In the year of 1913, the freshman class included two very enthusiastic would-be architects enrolled in Course IV. To hear the stories of these two youthful financial wizards, one might question the choice of Course IV as their basic training. Other freshmen were known to have taken their wallets from their pockets and stood on them as these two financial wizards approached. Not until they had disappeared into the Rogers Building would the wallets be returned to their normal places. Time has mellowed these boys, and we all took great pleasure in the spirit of fun exhibited by Harold Lobdell and Neal Tourtellotte.

Arriving in the same car with a 25-pound tenderized ham, and somewhat late for the meeting, was James H. S. Bates '85, a successful dairyman from the environs of Olympia. Those who would know the early development of the state of Washington would do well to become acquainted with Mr. Bates. His 80 years have not subtracted from his rather gruff, dynamic personality, and his somewhat unusual but pertinent questions added a great deal to our meeting.

Dean Lobdell brought us a wealth of news about the activities and problems of the Institute in this present period of emergency. In a very interesting fashion he outlined Technology activities in research, the Army and Navy programs, and the changes in teaching and research personnel. We all left the meeting feeling that we understood more fully and were closer to the Institute of the present day.

Those present at the meeting were Gerald Frink '00, Joseph Daniels '05, Clarence E. Lasher '06, Maurice P. Anderson '10, Richard G. Tyler '10, Houghton H. Whithed '11, H. E. Lobdell '17, George H. Stebbins '17, Neal E. Tourtellotte '17, Arthur N. Brambach '21, Walter E. Church '21, Eugene W. Rudow '21, Winston A. Gardiner '22, Adrian J. Gilardi '22, Horace W. McCurdy '22, James W. Pratt '23, Holland H. Houston '24, James H. Frink '27, Gilbert J. Ackerman '28, Harold W. Bialkowski '28, Middleton M. Chism '28, Phillip F. Frink '31, Charles C. Wyatt '32, Edward F. Thieler, Jr., '33, J. Adron Troxwell '34, John G. Mooring '35, George C. Morrisette '35, George A. Parkhurst '36, Thomas J. Chang '37, James W. Barton '39, Edwards R. Fish, Jr. '39, Charles A. Lawrence, Jr., '39, Theodore P. Snow '39, Jacob A. Samuelson '40, Russell E. Winslow '40, William R. Mason '41, Vincent J. Grace, Jr., '42, George M. Watters, Jr., '42.

The following had planned to attend the meeting but were prevented from being present by out-of-town-business engagements: W. Scott Matheson '99, Ralph L. Dyer '06, Charles E. Hamilton '06, Harvey G. Schwarz '33, Holden W. Withington '39, Edward S. Campbell '26. — HOLLAND H. Houston '24, *Acting Secretary*, Rayonier, Inc., 719 White Building, Seattle, Wash.

CLASS NOTES

1868

Daniel M. Wheeler, the second-oldest known surviving member of the Class, died on September 29 in Pittsfield, Mass., two months after he had celebrated his 97th birthday. He was a prominent inventor and

1868 *Continued*

civil engineer and a loyal Technology Alumnus, and he will be greatly missed. [For more details of the career of Mr. Wheeler, see "The Institute Gazette."]

Professor Robert H. Richards, the other known surviving member of the Class, was unable to continue his annual custom of spending the summer at his camp in the White Mountains for the sole reason that he was unable to persuade the gasoline rationing people to give him sufficient gasoline to go there. His summer was therefore spent in the old home on Eliot Street in Jamaica Plain. His 99th birthday was observed on August 26, and he was the recipient of many greetings on that occasion.

1883

Julien W. Vose, long associated with, though not a graduate of the Class, died at his home in Edgartown, Martha's Vineyard, on August 3. The following notice is taken from the *Vineyard Gazette* of Edgartown: "Mr. Vose was the son of James Whiting Vose and the former Almira Howe. The career of his father was typical of American enterprise in the formative years of the nation. First a cabinet maker, then a manufacturer of piano keys, James W. Vose founded the firm of Vose and Sons, piano manufacturers, and from 1855 devoted himself to the manufacture of pianos. He died at the age of 86 at the close of 1904, leaving three sons, Irving B., Willard A. and Julien W. Vose.

"Julien W. Vose attended Massachusetts Institute of Technology and was a classmate of Benjamin G. Collins of Edgartown. In June, 1880, he visited Mr. Collins at Edgartown for a bluefishing trip, and here he met Miss Anna E. Pease for whom he quickly formed an attachment which was the strongest tie of his life. They were married on the bride's eighteenth birthday, and the married life which followed was singularly happy and devoted on both sides. In 1934 they observed their golden wedding at the Fensgate in Boston where they had been spending the winter . . . their children and grandchildren about them. This was not the culmination, however, for Mr. Vose lived to celebrate their fifty-ninth anniversary.

"During the early part of his life Mr. Vose was active in the affairs of the piano company. About thirty years ago he retired, and spent an increasing amount of time on the Vineyard, also traveling a great deal in this country and abroad. He liked to take his grandchildren on his long trips, and one of his hobbies was the taking of motion pictures of which he compiled a considerable library. He showed many of the films for the enjoyment of Edgartown friends and neighbors.

"During his long life, Mr. Vose had served the town of Edgartown as selectman and assessor and as superintendent of streets. He was one of the founders . . . of the Edgartown National Bank. . . . Mr. Vose was one of the founders of the Edgartown Water Co. He was active in the old Home Club during the golden era when its membership included many Vineyard notables of the past. . . . Mr. Vose was a loyal and devoted Mason, maintaining a long activity in Oriental Lodge, of which he was trustee for many years, as well as the holder of other offices. He was a 32nd Degree Mason, being a member of the Massachu-

sets Consistory and Boston Commandery of Knights Templars. Mr. Vose was one of the founders of the Edgartown Associates, the group which made possible the building of the Edgartown Yacht Club and contributed much to the advancement of Edgartown. He was a member of Aleppo Temple, the Boston City Club, and the Boston Masonic Club.

"Outliving most of the contemporaries of his younger and middle years, Mr. Vose adjusted to the changing times and seemed to belong to each decade as it came along. He was keen of mind, energetic and undeviating in any course which he considered right. He is survived by his wife and by two daughters, Mrs. Arthur D. Weston and Mrs. Frank S. Lovewell of Newton, and one son, Leroy W. Vose of Edgartown. There are a number of grandchildren and great grandchildren in whom Mr. Vose took great pride." — HARVEY S. CHASE, Secretary, 431 Chase Avenue, Winter Park, Fla.

1885

The annual class luncheon was held on Saturday, June 5, at the University Club in Boston. Those present were Bedlow, Hunt, Nute, Parsons, Rawson, Sands, Wallis, and Worthington.

We drank our customary silent toast to those classmates who have left us and to those who were absent. After doing justice to the luncheon, we indulged in reminiscences.

Frank E. Sands, born in Cambridge on December 4, 1865, died there on July 10, after an illness of a few days, following a severe heart attack. I quote: "It may interest his classmates to know that he was the *youngest* boy with the *highest average* to graduate from the public schools in Cambridge. He entered Tech in 1881 at the age of sixteen."

He started his business career as a salesman for a wholesale clothing firm, and then went to work for his father's firm, the Sands, Taylor and Wood Company, flour merchants. This company was founded in 1787, and Frank became president in 1924.

He was interested in civic affairs, having been a member of the Cambridge City Council and of the Cambridge School Committee for several years. He was senior deacon of the North Congregational Church, and also trustee and vice-president of the North Avenue Savings Bank, both located in his home city. He was a member of several clubs, and was a Mason and an Odd Fellow. Frank was a loyal member of '85. He attended our reunions and was present at our last luncheon on June 5. Although we knew he had had a bad heart for some time, he appeared as well as usual to us. He was always genial and in discussions contributed valuable opinions on current affairs. He will be missed by all who knew him. — ARTHUR K. HUNT, Secretary, Longwood Towers, Brookline 46, Mass.

1887

The 56th annual reunion of the Class was held at the Plymouth Rock Hotel, Plymouth, Mass., on June 17, the place of our 55th of the previous year, and was a most enjoyable affair, both as a reunion and as a delightful change from the heat and turmoil of a hot, crowded city. Despite unpleasant travel conditions and other handi-

THE TECHNOLOGY REVIEW

caps, we were able to muster seven men: Cole, Cameron, Sever, Brett, Squash Cushing, Schmidt, and the Secretary.

One of the most interesting features of the meeting was the reading of a letter from our esteemed classmate Frank Shepard of Denver, Colo., who wrote: "I wished so earnestly that I might have been with you, but the present demand for essential metals is requiring our best efforts in the development of machinery and equipment for their recovery, and I had to stay on the job. I have recently developed a plant in Newfoundland for the recovery of fluor spar, and another plant in Lima, Peru, at an altitude of 14,500 feet, for the recovery of vanadium values. Other plants are operating in Florida for the treatment of pebble phosphates, in Alabama for the recovery of graphite, in Colorado for the recovery of fluor spar, lead, and zinc, and in Ontario, Canada, for the production of nickel. And so the mining industry is doing its bit during the present emergency.

"My son, David A. Shepard '26, has for nearly a year been technical attaché at the American Embassy in London, England, and hopes to make a visit home sometime this fall. My younger son, Richard C. Shepard, a graduate of the University of Colorado, is an inspector at the ordnance plant near Denver. My daughter Jean married Burton Martin, who is now in the service of the American Red Cross. How earnestly I wished that I could have been present at the reunion to greet all and to renew old associations. Mrs. Shepard is always interested in the events of the Class, and joins me in wishing that all derived from the occasion renewed strength for the task before us."

On Friday, June 18, the members motored to Frank Brett's delightful country manor at North Duxbury, known as Crooked Lane Farm, where he and Mrs. Brett entertained at an afternoon tea in honor of the Class. The occasion was thoroughly enjoyed by all, including Mrs. Bruce, hostess at the Harlow House in Plymouth, and Miss Morrissey, cousin of our late classmate Henry F. Stoddard, who were guests of the Class and who have contributed so much to the enjoyment of the Class at our reunions of the past two years. One outstanding feature of the party was the cutting of a huge birthday cake in honor of our host's natal day. It is the fond hope of all that we may observe future reunions in the same manner and in the same location.

Our classmate Frederick Kendall, who was unable to attend the Alumni Dinner and also the reunion at Plymouth, is still located at 115 Grasmere Street, Newton 58, though he expects to leave before long. He would be delighted to hear from any of the Class.

A note from his widow announces the passing of our classmate, Dr. Charles H. Gardner, at Baltimore, Md., on August 10, three days before his 79th birthday. He had been an invalid for many years, and as a result he was unable to travel and to meet his old associates of Technology days, although his interest in the Class continued unabated all his life and he was greatly appreciative of all news of class activities. Although your Secretary never enjoyed the pleasure of his acquaintance in the early years, he had nevertheless enjoyed a correspondence with him in later years, and his

1887 *Continued*

loss will be greatly felt. — NATHANIEL T. VERY, *Secretary*, 15 Dearborn Street, Salem, Mass.

1888

Sanford E. Thompson, our Assistant Secretary, sent in this report of the 55th anniversary meeting of the Class, held at The Country Club, Brookline, Mass., on June 7. The following 15 members attended: William Atkinson, Henry D. Bates, Herbert S. Bird, Luther W. Bridges, C. Leonard Brown, John T. Cavanagh, Arthur J. Conner, Fred E. Ellis, Charles L. Faunce, George W. Hamblet, Ralph W. Reynolds, John C. Runkle, Ivar L. Sjostrom, Sanford E. Thompson, and Edwin S. Webster.

The Country Club did a fine job for us, providing plenty of room for sociability. A delicious luncheon was served, starting with cantaloupe "en surprise," followed by New England broiled live lobster with all the fixings. For dinner we had real honest-to-goodness beef, and tenderloin at that.

The Country Club fell down badly in one very important particular, namely the failure to arrange with the weatherman for a fine day. (Or was that the fault of the Secretary?) It rained! So we bowled no bowls, and we golfed no golf, and we tennissed no tennis, but we all had a fine time, nevertheless. The long-distance champion was Herbert Bird, who came from Brooklyn, N.Y. The greatest feat was accomplished by Luther Bridges, who came to dinner with crutches to help out his broken leg. He was driven by his daughter. Eastman ought to have been there, but, alas, he was unable to make it because of certain experiments in pyrotechnics in which he had unintentionally indulged. The Boston *Herald* reporter who telephoned the Assistant Secretary during the dinner for information about the meeting was interested only in the methods of conveyance used — whether bus or auto. He particularly wanted to know if anyone had come by bicycle.

The most interesting and entertaining feature, taking a large part of the afternoon, was a description by President Webster of what Technology, under the direction of President Compton, is doing for victory. Much of what Ned told the Class was confidential, especially that which related to research, but we may say that results of the work done have had much to do with the successful progress of the war to date. The magnitude of this research program is indicated by the fact that the total number of staff and employees has increased four-fold in the past two years — from 1,100 to 4,600 — and the total floor space utilized by the Institute has increased by nearly 15 acres! Before the war, the Institute's monthly pay roll was about \$200,000 a month; now it is over \$200,000 a week.

In educational lines, M.I.T. has likewise expanded. Its normal enrollment is 3,000; under war conditions this has grown to over 4,000 as a result of special Army and Navy training programs. Altogether there are about 2,700 Army and Navy students, and all of Technology's student housing and restaurant facilities have been turned over to them. Most of the special programs require special training in physics, English, and mathematics, with the result that the Institute has such extraordinary teaching loads as 70-odd sections in elementary physics, and 80 or more sections in English.

Along with these Army and Navy students, Technology has about 1,600 civilian students. New freshmen enter in June and in February, and the number of applicants has actually increased. These men are being trained on a round-the-year basis, so that they may complete their work as rapidly as possible. In addition to having these 4,000 full-time students, the Institute is giving short intensive courses under the auspices of the Engineering Science and Management War Training Program of the United States Office of Education. These courses are given to train men and women at the college level to fill shortages in industry, and several thousand have been trained at Technology.

Following Ned's address, Assistant Secretary Thompson talked about "Inside the War Department in Washington," from his standpoint of over a year's service as consultant to the Secretary of War. The colonel said that notwithstanding the seeming confusion in the prosecution of the war in Washington, the production of munitions is finally progressing at a satisfactory pace. The principal defects in the War Department itself were the early lack of balanced control in the manufacture of components of the various munitions. Cases occurred, for example, where airplanes were grounded for lack of propellers, and guns were held back by delay of minor parts. The reorganization of the War Department in the spring of 1942, with the principal divisions of Army Ground Forces, Army Air Forces, and Army Service Forces straightened matters out.

How Johnny and Mrs. Runkle are living in trailer fashion while quartering some 18 Navy officers in their commodious Cambridge home is a story by itself. Johnny's remarks were in a happy and humorous vein. He explained how, in early life, an unaccountable mania for making a house or two out of every stray barn and for resuscitating old houses in Duxbury, which in two days he denuded of bedroom furniture to provide 18 beds for the United States Navy.

In explanation of Mrs. Runkle's aptitude for this new venture, John gave an amusing picture of his bachelor farm in Waltham where he had taken her as a bride. It seems that in addition to some 100 or more cows on the farm, there was a large collection of pigs, for whose stomachs' sake a garbage contract with the town of Arlington had been arranged. Owing to a mix-up in the farm and house telephones, the bride on answering the telephone soon after arrival was instructed: "Send Mr. Runkle over for another load of swill today."

"I am sure," Johnny said, "that you gentlemen will understand that a woman introduced in early married life to all the intricacies of the swill business has nothing more in life to dread, and that the mere running of a sailors' lodging house holds no terrors whatever." He then went on more seriously: "We have 18 boys in the house now, and they come from all over the country. They change every two or three months, so we are getting to know a cross

section of the best type of American boys. And a fine lot of fellows they are! They are helping us to realize what a great and good country we are a part of, and we are making many pleasant friendships."

After telling us a little of Mrs. Runkle's duties during help hiatuses, and that at last a good helper had been found, Johnny closed his remarks with the following peroration: "To be sure the maid comes only on week days, so that on Sundays Mrs. Runkle still has the job all to herself. Thus on any Sunday morning, before or after church, depending on the rising habits of her lodgers, the heroine of this epic may be seen gliding cheerfully from one bed to another, humming softly to herself that beautiful old refrain, 'We're in the Navy now.'"

The Secretary was absent because Florida's winter temperature was too torrid for a cold-blooded animal from so frigid a place as Maine. As far as the reunion was concerned, his absence was the chief fly in the ointment. He sent his report on "Life Among the Soldiers in Florida and Maine" as follows: "This was the first five-year reunion that I have missed since I was in El Paso, Texas, in 1908 at the time of our 20th, and of course I have never missed a single one of the 14 grand Webster banquets.

"As I am down on the program to say something about soldiers in Florida and Maine, I will say that we now have on our farm a new and up-to-date barracks, with a complete mess hall, a well 200 feet deep, and an electric power plant, instead of the Army tents with soft-coal stoves in the middle, which we had for two winters.

"In Florida, not far from us, is a large hotel which has been taken over by the Army for an Air Corps hospital. I talked with some of the convalescents and found among them a soldier from Lexington, Ky., by the name of J. Ramsey, who rode Whirlaway in the Kentucky Derby he won a few years ago. Ramsey suffered from broken bones that heal very slowly. He was slender and very blond. In contrast to him was a flyer from El Paso, who was half Indian and half Mexican, of very dark complexion, with a mop of jet black hair on his head and chest. He looked so healthy and strong that I didn't dare to ask him why he was in the hospital.

"I had planned my visit to Florida for the first three weeks in April and decided to take back north as a souvenir a real 'lobster red' sunburn. So I discarded all head covering and lay around on the beach with only a pair of Army khaki swimming tights. I stayed a longer time each afternoon, as the regular winter visitors did. But after about a week of this, one morning I noticed that my head began to revolve in a horizontal plane and my stomach in a vertical plane, and so for 17 days I was in bed with a case of sunstroke. It was the second time in my life that I needed the services of a doctor, the other time being while on the U.S.S. *Scorpion* off the south coast of Cuba in 1898, when the mosquitoes brought Cuban malaria aboard.

"At the end of the 17 days, I had to learn to walk all over again and also learn to eat again! Mrs. Collins rushed down to me by the fastest train available. We found that the earliest reservation that we could get on the Silver Meteor for Princeton was on May 13. That made a little more than a

1888 *Continued*

month to wait, so my three-week vacation proved to be seven weeks long! We reached Princeton on May 14 and Chebeague Island on the 19th. It rained practically every day for quite a while, so that the plowing of my victory garden was delayed, but everything moved ahead at high speed as soon as conditions permitted.

"I wish that I could have been with you at the reunion, but that was impossible. I know that '88 had a grand time as always, and I send fond greetings to each and every one of my classmates."

Fred Ellis told of the "City's Place in the War," describing the civilian defenses and the contributions of city employees to war service. He told of the remarkable accomplishments of the city of Melrose, of which he was city engineer and superintendent of public works. During the period of his 11 years of service, there were reduction in taxes, an 83 per cent decrease in bonded debt, no increase in valuation, public works designed for ten years ahead, and surplus in the treasury. City expenditures are now confined to maintenance work. Most city departments are shorthanded because of enlistments in the services. He believes that the other municipalities in the state are carrying on the same as Melrose, and when peace comes they will be able to get along without "handouts" from the state or Federal governments.

In preparing the above notes in collaboration with the orators of the occasion and, of course, with the assistance of the Secretary, the Assistant Secretary expresses his appreciation of the co-operation of the men who attended the reunion for making it a success notwithstanding the so sad handicap of the forced absence of the Secretary. The Secretary writes that he is now fit again. He enjoyed his summer on "The Farm" at Chebeague Island, with its victory garden, in spite of the fact that a new barracks with barbed wire entanglements has been added to the view from the front porch. He has had the honor of having this barracks named "Collins' Point Obstruction Base." — BERTRAND R. T. COLLINS, *Secretary*, 39 Wiggins Street, Princeton, N.J. SANFORD E. THOMPSON, *Assistant Secretary*, The Thompson and Lichtner Company, Inc., 620 Newbury Street, Boston 15, Mass.

1890

Charles Sherman, our Alumni Fund representative, reports that our average contribution is larger but that fewer men have been heard from. Let us try to maintain our high standing, even though taxes and war bonds add to our problems. Perhaps some of us are holding back to see if we can increase our contributions.

Ernest LeSueur spotted in the *Saturday Evening Post* a duplication of Machado's idea, conveyed in '90's "Technique" 54 years ago by a picture of a Pullman car with only one other occupant, a charming young lady, to whom Machado is saying: "Beg pardon, is this seat engaged?" The *Post* picture shows a girl at a soda fountain, the sole patron, with a long line of unoccupied stools, while a sailor asks if the one next to her is "taken." LeSueur writes as though he is still well and is getting some joy out of life.

Bert Lenfest dropped in to the office recently. He is back from his usual summer trip to the Midwest and the Pacific Coast.

He reports crowded cars and uncomfortable traveling, but he is still able to sleep in a day coach. — Frank Atwood reports that he and Mrs. Atwood are well. They will delay their annual California sojourn this year until after January 1.

Clarence G. Norris, who was graduated with us but is listed as of the Class of '89, died on August 1. — Frank M. Greenlaw's address is changed to 123 Waterman Street, Providence, R.I. — GEORGE A. PACKARD, *Secretary*, 50 Congress Street, Boston 9, Mass. HARRY M. GOODWIN, *Assistant Secretary*, Room 4-242, M.I.T., Cambridge 39, Mass.

1891

Our classmate, Fred A. Cole, died on August 25 in Rochester, N.Y. With the possible exception of Walter Hopton, none of us have seen or heard from him for many years. Frank Lovejoy '94 of the Eastman Kodak Company sent me the following information about Cole: "After graduation he was an instructor in the Department of Mechanical Engineering at M.I.T. for a short time and then went with the Curtis Brothers Company in Cambridge as plant engineer. Charlie Aiken also worked for Curtis Brothers Company at that time, and I was his assistant. About 1897 Fred had charge of a development project financed by Du Pont in Gloversville, N.Y., but this was a failure. I was then with the Eastman Kodak Company, and later got Fred a job with Kodak as head of their engineering and maintenance department. He remained with them about 15 years and then resigned. Since then he has lived some of the time in Florida.

"Fred married late in life, and his widow, who was his second wife, survives him. I knew Fred well when we were at Technology, and he with others in our Class founded the Phi Beta Epsilon Fraternity. He was a good companion and we all liked him. He attended some class and fraternity reunions, but we lost all track of him after he left the Kodak Company. Incidentally, he gave me my first ride in an automobile, a 'one-lung' Cadillac. How times have changed since then!"

About September 1, I wrote to one-quarter of the present active list of approximately 60, which includes all those who are at all interested in our affairs. I asked them to write me so that I would have some notes for the November Review. I received three letters, less than I expected, but I hope to hear from others later on. It is my intention to follow this procedure with about 15 letters every two months, which covers the issues of The Review in which we are supposed to appear. When your time comes, help swell the percentage, but this does not prevent you from writing me at any time. You may have news of or from other classmates, or about your own affairs and interests, which include children and grandchildren. We seldom meet, so that a few minutes time, plus a three-cent stamp, is the only way that we can keep in touch with each other.

A letter from Walter Douglass, dated September 12, reads as follows: "I'm still in Daytona Beach; have been at 123 North Ridgewood Avenue for about a year now. It hardly seems true, but it is, that I arrived in Florida three years ago October 1. So much has happened for all of us in three

THE TECHNOLOGY REVIEW

years, it is difficult to keep orientated. I'm still in civilian life, and have really not given much of my time to the war activities. I was with the post engineers' office here for a short while, in connection with the WAC cantonment work, but this was just a short emergency period. I made a good effort to locate at the Charleston Navy Yard, and was just about to complete final arrangements when they decided some physical imperfection made it necessary to bar me. This imperfection had been with me 30 years and never gave me any trouble, but in the Navy even a civilian employee must have only perfection.

"I am represented in the Army by my son Donald. Do you remember you met him with his wife at Charlie Aiken's at one of our Sunapee reunions? He was in the Air Corps in the first World War, enlisted 18 months ago, and went into service the last of May, 1942. For three months he has been at Ephrata, Wash., at a training station for crews of bombers. This is an ideal locality for bombing and gunnery practice, for there are no attractions for civilians either to work or play there. Don is executive officer for the commandant of a squadron. He leads a busy life and is on the jump all the time. My daughter Helen and her husband Mr. French have been in Washington, D.C., for nearly a year. He is in some branch of the Army Engineers.

"I still spend some time working on miniature furniture, which still has an interest for me. At present I am finishing a room — a three-sided room like a stage setting at the same scale as the furniture, one and one-half inches to one foot. It is early American architecture, and the furniture is early colonial. If when finished it photographs well, I will send you a print. I am in good health and spend much time in the open. Florida weather in Daytona was more comfortable than the northern weather much of the time last summer. Everything is upside down, but beginning to get righted again, slowly but surely. Rah for '91!"

On September 8, Harry Cole wrote: "Florence and I are alone, both children having set up in other localities, but we are both in fair condition. My oldest grandson was married last Christmas. William was graduated and is in degassing work at the Charleston Navy Yard. His younger brother is in New Guinea with the Army. The girl in that family, who was graduated from Sargent in 1942, has a job. My daughter's children are still both youngsters.

"I am lucky enough to be able to handle a cranberry scoop for several hours a day, and expect to do that every fair day for awhile, as the help situation is bad. We have a small garden at home, but are having lots of tomatoes, beans, and some corn. The rabbits get some, and the woodchuck some, but still we have fared well."

A letter from Channing Brown, dated September 6, reads as follows: "I am fond of members of the Class, and get a thrill in learning about them and their interests. The colored photo you took in front of my house in the fall of 1941 has been greatly admired by all sorts of people. The farmers come in here and marvel that such pictures are here at our doorstep. Thank you again for it.

"My hands are full of just the sort of work I most like to do, and I get more of it

1891 *Continued*

every day. To be useful is the greatest of blessings for old fellows like you and me. I'm sorry I can't help you with your copy for The Review. Haven't seen one of the boys since we last met at the Algonquin, and I, poor soul, have not a fragment of news in me." *Secretary's Note:* The picture referred to was a snapshot Kodachrome, which was enlarged to a five by seven Minecolor. "Just by luck" it was one of the best prints of this kind that I have seen.

Your Secretary does not wish to be in the position of requesting letters and not being willing to say anything for himself, so here goes. I am still on the job with the Grinnell Company in Providence, now doing all War Work. It is very interesting. We have done a great deal of fire protection work for the Du Pont Company's powder and high explosive plants, some of which form large communities of themselves. I can report a grandson in the Army. I have one son-in-law, a captain in the state guard, and one daughter, who is a spotter for airplanes. We are all trying to do our bit. I had no vacation this summer, which is not as bad as it sounds, as I don't have to punch a clock. What do you say to a class dinner this winter, and will you come?

The following changes in address have been received: Carl H. Bunker, 75 Hillside Avenue, Arlington, Mass.; Horace L. Brand, 2426 Sheffield Avenue, Chicago, Ill.; and Alexander W. Moseley, 2039 Orrington Avenue, Evanston, Ill. — HENRY A. FISKE, *Secretary*, care of Grinnell Company, Inc., 260 West Exchange Street, Providence, R.I.

1892

Richard Barclay Snow of Norwich, Conn., died on December 16. Snow was born in New Bedford, Mass. After leaving the Institute, he became active in the textile industry, passing through grades of foreman, superintendent, and assistant agent to agent. He was a member of the Providence Engineering Society and the Southern New England Textile Club.

Frederic Hall Harvey of Galt, Calif., died on May 25. Harvey was born at Sacramento, Calif., and attended Bates Academy at San Rafael and Booses Academy of Berkeley before coming to the Institute, where he took the Course in Mining and Metallurgy. We will remember him as one of our leading student athletes. Harvey had engaged in many mining activities in California and had been mining and consulting engineer in the United States and in Mexico. He was in the mining department with the United States Army Engineers, was vice-president of the California Hydraulic Mining Association, and a civilian member of the California Debris Commission.

Douglas Aymar Cater of East Orange, N.J., died on July 13. Dr. Cater had been in poor health for several months, suffering from a heart ailment. He was born in New York City and received his early education at the Storm King School. After graduation from the Mechanical Engineering Course, he became known as a skilled draftsman. While he was working as a mechanical engineer, a friend took him to an anatomy lecture, which lured him into the medical profession. He enrolled in Columbia University's College of Physicians and Surgeons and obtained his medical degree four years later. He interned at Bellevue Hospital, New York, and later was successively

junior and senior member of the staff of the Orange Memorial Hospital, retiring eight years ago. Since his retirement he had been the hospital's consulting physiotherapist. Dr. Cater was a fellow of the American College of Surgeons, the Society of Surgeons of New Jersey, Orange Mountain Medical Society, and the Essex County Medical Society. He leaves a daughter and a son. — CHARLES F. PARK, *Secretary*, Room 5-111, M.I.T., Cambridge 39, Mass.

1893

The 50th anniversary reunion of the Class, held at The Brookline Country Club on Saturday, June 5, was a most successful event. Forty-one "old-timers" and President Compton, our honorary member, joined in the festivities — a remarkably fine attendance considering war conditions and travel difficulties. The weather was ideal. During the morning the members gathered in the '93 suite in the Hotel Copley-Plaza, Boston, and at 11 o'clock left there in limousines for The Country Club. On arrival at the club, the first thing to greet the Class was a notable collection of photographs, trophies, and other exhibits which either had been contributed by members or procured through the kind co-operation of Institute authorities. These were assembled, "edited," and arranged for display by Bert Dawes and Fred Keyes. Included in the collection were period photographs of the entire Institute faculty of our student days; of the classrooms and laboratories we used in the old "Tech on Boylston Street" (and Trinity Place); group photographs taken both during our undergraduate days at the Institute and at various subsequent reunions; and snapshots from individual members showing their home life and activities, with cartoons of some of the Class, particularly of Walter Swanton depicting his leadership of civic activities in Washington, D.C. These same cartoons had appeared in a Washington newspaper. In places of honor were photographs of Fred Parker Emery, beloved English instructor of our freshman year and the first honorary member of the Class, of A. Farwell Bemis, and of Henry A. Morss. One of the most interesting was a photograph of the youngest class baby, Arthur Farwell's daughter, Cynthia, born November 12, 1941.

After suitable preliminaries, the Class partook of luncheon as guests of the Class President, Fred Dillon. For the afternoon no formal program had been arranged, and the men were free to relax and renew old friendships on the piazzas and shady grounds of the club. While golf, bowling on the green, and other active sports were offered, none availed themselves of these opportunities. This is no indication that the Class had grown decrepit but rather that the bonds of friendship proved stronger than the sport attractions.

At the brief business meeting immediately following the evening banquet, the following officers were elected: President, Fred Dillon; Vice-presidents, Harry Latham, A. B. Edwards, and Bert Dawes; Secretary-Treasurer, Fred Fay; Assistant Secretary-Treasurer, George Glidden. It was voted to send greetings to the living members of the 75-year class, Professor Robert H. Richards of Jamaica Plain and Daniel M. Wheeler of Pittsfield, Mass. This pleasant duty was duly attended to

by the Secretary. (Mr. Wheeler died on September 29 at the ripe age of 97.)

The main event of the evening was an informal and intimate talk by President Compton, who spoke briefly of present conditions at the Institute and more particularly of his observations of conditions in England, whence two days before he had returned from a month's stay as a member of a special government commission composed of two civilians, two Army officers, and two Navy officers. Dr. Compton had to leave early to keep another engagement, and the remainder of the evening was under the direction of George Glidden, toastmaster. Charles Spofford gave a most interesting address, contrasting the Institute of 50 years ago with that of today. This talk was based on an address which he gave earlier in the year to the Class of 1943 at its class day exercises. Letters were read from many absent members and from Professor Charles E. Locke '96, Secretary of the Alumni Association, who because of illness was prevented from being our guest. Among the literary contributions was a poem by M. T. Barbour. Brief remarks from several members brought to a close the best reunion in our history.

The members present were H. W. Alden, Detroit; M. T. Barbour, Harvard, Ill.; F. D. Richardson, Cleveland Heights, Ohio; W. I. Swanton, Columbus, Ohio; Marvine Gorham, Buffalo, N.Y.; Dr. A. B. Wadsworth, Albany, N.Y.; G. T. Blood, East Orange, N.J.; C. V. Allen, Arthur Farwell, F. W. Lord, J. H. Reed, J. I. Solomon, W. C. Whiston, S. E. Whitaker — all of New York City; A. H. Jameson, Branford, Conn.; C. E. Paine, Bath, Maine; O. E. Parks, Westfield; F. N. Dillon, Fitchburg; and H. M. Latham, Worcester, Mass.; and from in and around Boston: J. B. Baxter, M. B. Biscoe, J. B. Blair, L. B. Buchanan, J. S. Codman, H. N. Dawes, G. K. Dearborn, F. H. Fay, G. B. Glidden, F. H. Keyes, W. F. Lamb, E. I. Leeds, F. F. Low, Edward Page, E. S. Page, A. S. Pevear, A. A. Shurcliff, F. D. Smith, C. M. Spofford, C. M. Taylor, J. F. Tomfohrde, and C. R. Walker.

The passing of Walter Irving Swanton on June 22, only about two weeks after his participation in the 50th reunion, will be learned with deepest regret by his classmates, and particularly by those who spent an enjoyable day with him at The Brookline Country Club on June 5. That evening, at the close of the reunion festivities, he went to the home of his brother, Henry Swanton '94, in Newton, Mass. Shortly thereafter he suffered a heart attack. During the previous winter he had had several such attacks, but for months he had planned to attend the reunion, in which his interest was so keen that his daughter, Dr. Lucy Swanton Clark, with whom he lived in Columbus, Ohio, did not have the heart to try to dissuade him from making the trip to Boston.

Following his graduation with the Class in Civil Engineering, Swanton spent six years with the Boston and Albany Railroad, mainly on bridge work. Thereafter he was a draftsman with the Union Bridge Company at Athens, Pa., and the Edge Moor Bridge Works at Edge Moor, Del. For a time he was structural draftsman in the Bureau of Yards and Docks of the Navy Department, at Navy yards in Norfolk, Va.

1893 *Continued*

League Island, Boston, and Brooklyn. In 1903 he went to Washington as engineer-architect in the supervising architect's office of the Treasury Department. In 1905 he was transferred to the United States Reclamation Service as assistant engineer. He remained with the Bureau of Reclamation until he reached the age limit for retirement in 1939, most of his work for the bureau having been at the Washington office. During his long years of residence in Washington, he became deeply interested in its municipal affairs and gave freely of his time to civic work. He had served as president of the Columbia Heights Citizens Association and had been active in the Federation of Citizens' Associations, in which he was elected to the citizens advisory council. Early in his residence in Washington, he entered the law school of National University, from which he received A.B. and A.M. degrees. He was admitted as a member of the bar in the District of Columbia courts. Becoming interested in the subject of single tax, for a time he conducted classes in Washington in the Henry George School of Social Science, and in addition he wrote many articles on Henry George and the single tax. In all these varied activities, Swanton filled the part of the good citizen.

Born on September 6, 1869, at St. Joseph, Mo., he prepared for Technology at the Gardiner, Maine, high school, entering the Institute with the Class in 1889. In 1904 he married Lucy Cerise Ross in St. Louis. Mrs. Swanton, who died in 1933, had been a prominent Washington clubwoman, president of the Women's Single Tax Club and, like her husband, active in civic affairs. Walter Swanton is survived by three children: Dr. Lucy A. Swanton Clark (Mrs. Sheldon deForrest Clark) of Cleveland, Ohio; Edith Swanton; and Walter Frederick Swanton '33, M.I.T., Course X.

Frederic Hall Harvey, who associated with '92 and was graduated with us in Mining Engineering, died at his ranch "Harvey Home," Galt, Calif., on May 25. He was born at Sacramento, Calif., on March 3, 1869. Beside his training at the Institute, he studied at the School of Mining at Freiburg, was later a volunteer apprentice at the Carnegie Iron Works, and finally settled down as representative of the Guggenheim interests on the Pacific Coast. There his career as a mining engineer was a notable one. At the time of his death, he was serving as a civilian engineer with the Corps of Engineers, United States Army, at the Sacramento division in California. The following statements were made in a tribute by Colonel R. C. Hunter, Army district engineer at Sacramento: "Mr. Harvey was vice-president of the California Hydraulic Mining Association. He has been engaged throughout his lifetime in various hydraulic and other forms of mining in this country and in Mexico, and he had a wide acquaintance among Pacific Coast mining men. Simple, straightforward, and honest in all his dealings, his character and personality were an inspiration to all with whom he had contact." In 1913, Harvey married Anna Miller Wood, a talented singer of Berkeley, Calif., who was well known in Boston, where she was trained at the New England Conservatory of Music. She also studied in Munich. Mrs. Harvey died some years ago. Harvey is survived by his sister, Genevieve Harvey.

Albert Sweeter Moulton died at his home in Derry, N.H., on September 13. For three years he was a student in Chemistry with the Class, and afterward attended Boston University, from which he was graduated in 1895. Throughout his lifetime he was employed by the Customs Office in Boston, and for many years was examiner at the Appraisers stores. For most of his life he was a resident of Lynnfield, Mass., moving to Derry, N.H., about 10 years ago. He was born on July 31, 1872, in Lynn, Mass. In 1902, he married Grace Edna Lufkin, and they had a son, Robert Lufkin Moulton. On August 1, 1942, Moulton was retired from the Customs Office on a pension.

Frederic Appleton Wallace, who was graduated with us in Mechanical Engineering, died in Lawrence, Mass., on May 24, after a brief illness. His whole business life was spent in the service of the Pacific Mills of Lawrence, where he started work in 1886. Directly after his graduation from Technology, he began work as assistant to the mechanical engineer, and soon he was promoted to chief engineer of the steam and power plant. Later he became master mechanic of the entire Pacific organization, including the worsted division and the print works in Lawrence, and of branches in Dover, N.H., and the South. He was instrumental in changing the power system from mechanical to electric drive, and in the construction of a new power plant and of the new Pacific Print Works. In 1913 Wallace was appointed a member of the Massachusetts state board of boiler rules as a representative of the boiler users, a post which he held continuously to the time of his death. In 1907 he married Lilly Thorpe of West Peabody and for many years they made their home in Andover, Mass. They had no children. Wallace is survived by his widow.

The following changes of address have been received: Myron Hunt, 200 North Grand Avenue, Pasadena, Calif.; John C. Hawley, The Evergreens, Rural Delivery 4, Madison, Wis.; and George W. Stose, 2308 South Nash Street, Arlington, Va. — FREDERIC H. FAY, *Secretary*, 11 Beacon Street, Boston 8, Mass. GEORGE B. GLIDDEN, *Assistant Secretary*, 551 Tremont Street, Boston 16, Mass.

1894

The Secretary finds it almost impossible to believe that our Class will be the next of the 50-year classes. Much could be written of the changes that have taken place at Technology in the half century since we entered upon our senior year, and much has also occurred in our national history. These events will doubtless be reviewed and discussed when we get together next year at the time of graduation or at a 50-year reunion in June. The celebration of our 50 years as Alumni should certainly take place, despite the war and our lessening numbers, and from now on all surviving members of the Class whose addresses are known will receive letters pertaining to this event. A committee on our reunion will begin at once to formulate plans for the event, and it is hoped that all effort will be made by every member to come back for another of the happy gatherings that in the past have so strengthened our bonds of friendship.

The Secretary has had a note from Arthur Patrick announcing his retirement and say-

ing that he is now residing at Centerville on Cape Cod. If this is a permanent residence, we are glad, even belatedly, to welcome him to Massachusetts, and only the gasoline shortage has prevented a special trip to call on him. — Walker Brown has returned from Florida to New Jersey. His latest address is 24 Hamilton Road, Glen Ridge, N.J.

Edwin Hicks reports his present address as 218 Albermarle Avenue, Lansdowne, Pa. Charles Abbot, our most distinguished scientist, who is secretary of the Smithsonian Institution, is still producing valuable reports on solar radiation. Along with his other important committee duties, he is on the board of trustees of Science Service as one of the representatives of the National Research Council. — Tom Curtis is still in Boston as an officer of the Lord Electric Company, which has had a very successful career in electrical installations of large proportions in Boston, New York, and elsewhere. Leslie Moore has retired from active service in the Massachusetts Public Utilities Department. His address is now 5 Simon Willard Road, Concord, Mass. He has given many years of fine service to the state, and we hope he will enjoy his well-earned reward, for certainly that is what a retirement should be. (The Secretary speaks with complete authority on this point.) — Arthur Shurcliff has an office at 14 Beacon Street, Boston. (We knew him as Shurtlef, but he has adopted the original spelling.)

It is most saddening to secretaries of older classes that such a large proportion of their reports should necessarily consist of necrological material. Three deaths have been reported since our last notes. Mabel Chapin, a special student during a part of our undergraduate days, died on November 3, 1942, but the Secretary had a belated notice thereof. Miss Chapin had lived quietly in Brookline for many years.

The deaths of two men who had been constant and most loyal in the affairs and interests both of the Class and of the Institute have occurred. On April 26, William H. Bovey of Minneapolis was stricken with a heart attack while driving his car in one of the suburbs, but he managed to steer to the roadside before losing consciousness. Death must have been almost instantaneous. He was 72 years old, having been born in Minneapolis on February 25, 1871.

Bovey was one of the outstanding members of our Class, and was our president for two of the five-year periods between reunions. He was a man of finest character and of marked ability. After graduation he became associated with the Washburn-Crosby Milling Company, which he served for 33 years as engineer, general manager, and vice-president in charge of milling operations. Retiring from this position in 1928 at the time the firm was consolidated with others to form General Mills, he became vice-president of the Cannon Valley Milling Company, of which his son, William H. Bovey, Jr., '22, is president, and as before he devoted much time and energy to various forms of public usefulness. His association with William H. Dunwoody of the Washburn-Crosby Milling Company led to his acceptance of the position of president of the Dunwoody Industrial Institute when that vocational school was established in 1914. This position he filled constructively until 1937. From 1913-1933

1894 *Continued*

he was a member of the Minneapolis Park Board, and served several terms as its president. As a trustee of Carleton College at Northfield, he was for many years a member of the Carleton Corporation, the college's property-owning body, and also served as chairman of the committee of the Carleton department of astronomy.

In 1924 Bovey was elected a life member of the M.I.T. Corporation and served on numerous committees on departments. This particular membership he valued and appreciated most highly, and he made it a point of duty to attend Corporation meetings as frequently as possible. He was also a trustee of the Pillsbury Settlement House, and a lifelong member of the Plymouth Congregational Church in Minneapolis. In spite of his many business connections and civic and philanthropic affairs, he found time for recreation and social matters. He was an ardent golfer and a member of several clubs, and he enjoyed the pleasures associated with life at his summer home on Lake Minnetonka. He had a full, satisfying, and exceedingly useful life. To his family, which includes his widow, his son, and his daughter, the deep sympathy of the Class is extended. We share with them the sorrow caused by the passing of a true and loyal friend.

On July 29, Robert Spurr Weston, one of the country's foremost sanitary engineers, died suddenly of a heart attack. For many months Weston had been working beyond his strength and had been ordered by his physician to take a brief vacation. He was within five days of 74 years of age. As senior member of the firm of Weston and Sampson of 14 Beacon Street, he had served many states, municipalities, and corporations on problems of water supply, stream pollution, and sewage and industrial waste treatment.

Weston was born in Concord, N.H., on August 1, 1869. His family moved to Brockton during his boyhood, and he attended high school there, graduating in 1887. He was graduated from Amherst College in 1891, having specialized in chemistry. After a year or so of practical work in sugar chemistry in Louisiana, he came to M.I.T. to continue his studies of chemistry and sanitation, and thus for two years he was associated with our Class. For the next few years he was engaged in work in sanitary chemistry and engineering in various parts of the country, notably in New Orleans when the sewage system was installed in that city. He opened an office in Boston about 1900 and was later joined by his partner, Mr. G. A. Sampson. Weston's professional work took him to various parts of the country, especially in the East. For many years he was a regular lecturer in the Department of Biology and Public Health at M.I.T., and was an assistant professor from 1913-1916. He continued to give one or more lectures annually until 1941. He was a member of many important scientific and technical societies, many of which he served as president or vice-president. He published many technical papers and was author of the *Water Works Handbook*.

Weston was a member and deacon of the Harvard Congregational Church, Brookline, where his funeral was held on August 3. The Class was represented at the service by Claflin and the Secretary, and flowers were sent. Weston leaves a widow, the

former Josephine Fitz-Randolph, and one son, Joseph Fitz-R. Weston, and with them we join in sorrow and to them extend deep sympathy.

Weston was a man of high character and energy, with a warm, attractive personality. Coming from another college, he demonstrated by his loyalty to M.I.T. that it is possible for a man to feel a sense of responsibility and affiliation to more than one institution. A regular attendant at our five-year reunions and generally present at alumni gatherings, he enjoyed a wide acquaintance and the cordial friendship of the Class with which he was associated so loyally. These two men, Weston and Bovey, will be greatly missed at future gatherings of the Class, and they will ever be held in sincere remembrance. — SAMUEL C. PRESCOTT, *Secretary*, Room 3-233, M.I.T., Cambridge 39, Mass.

1895

On June 1, Frank Curtiss Schmitz, I, who was located in New York City for many years, became works manager of the Robinson Manufacturing Company, Muncy, Pa., builders of processing machines. His previous connection with the Bayonne Associates, as chief field engineer, terminated on March 15. He says this work was intensely interesting but very exacting. — Louis A. Abbot, II, has retired from his labors in Washington, D.C., and can be found at 116 Columbia Avenue, Cranston, R.I. He contemplates making Maine his permanent home after the war.

Wonders never cease! Responding to the Secretary's appeal, William T. Hall, V, wrote an eight-page letter, the first great communication from him in 25 years. The letter is great reading. It is impossible to reproduce it in entirety, but here are a few highlights: Billy, who is retired, now resides in Rochester, Mass., on a two-acre farm. He is growing more weeds than vegetables but is diminishing his corpulence. He is now installed as church deacon and chorister, and is the expert interpreter of the rationing formulas. He enlisted in the teaching staff of Thayer Academy, where he performed the miraculous by instructing three classes in physics and chemistry at the same time, in order to pinch-hit for a Navy draftee. He is writing chemical extracts for chemical journals to the tune of about 500 a year. During his spare time, if he has any, he assists materially in the management of his daughter's summer camp for children. This is work for "Dad Hall," but he enjoys it. The things he is doing keep him young.

Henry D. Jackson of Concord, N.H., also responded to the call with an interesting account of his doings. Henry is still handling expert engineering problems with the use of packing. He also represents the Armor Clad products, which are surface coatings for refractory products, as bricks in heating furnaces to prevent destruction of the brick. This armor coating on bricks will stand temperatures up to 4,000 degrees.

Before we entered the war, Jackson submitted a scheme to the British War Office for a rocket to stop planes over England. The office reported that it was no good. However, in a story of the trip to Murmansk in the *Saturday Evening Post*, the scheme was described as most successful. Henry contributed to our war effort by

furnishing schemes to the National Inventors Council, Washington, D.C., for speeding depth bombs in the water, since submarines can now dive more quickly than heretofore. His victory garden is bearing great fruit.

Judson Dickerman is one of the much-traveled men of '95. In June, following an extensive trip to Brazil, he went to Puerto Rico for a second time, traveling 4,300 miles by air. He states: "The exploitation of the poorer people for 400 years, the absolute promiscuity between the blacks and whites, or part whites, has left a people of all shades of black and tan, rather light weight, short of stature, but still nimble and maintaining an existence and breeding at a rate our American-European people would consider intolerable. . . . It is a land of flowers, coconut palms, sugar, and coffee, but no birds and few wild animals other than rodents. The ocean breeze, if one can get it, makes the continuous temperature of 80 degrees tolerable, but one perspires all the time. Flowers are mostly on trees and high bushes. Marked contrast exists between the rich and poor. The island is handicapped by the lack of industry for consumers goods, practically everything, including the major portion of the food supply, being imported from the continent." Dick reports a second grandson, the son of his oldest boy, Dr. Charles P. Dickerman.

In a letter to the *New York Times*, Gerard Swope expressed his views on controlling German industries after the war. He said: "It is imperative that the direction and character of German heavy industries, chemical industry and power developments be controlled by the United Nations." Other essential factors in maintaining peace were "division of the German empire into the original states; forced disruption and wide emigration of the Prussian military caste; exclusion of former Prussian officers, from a lieutenant up, from the army of any German State, and upon demobilization of the German Army sending the men to assist in rebuilding the homes and factories of those countries which have suffered most."

"For all who want to work, full employment is a social, political, and economic must for the postwar era, and if it is not supplied by private enterprise the Federal Government will step in." Such was the gist of the message that Al Sloan carried to the Pacific Coast businessmen and industrialists. He also said: "It is going to be impossible for the government to supplement private enterprise and stay within the bounds always regarded as the proper field of government. Price controls by government should continue for six months after the war to control inflation, and the government should announce now its policies on matters on reconversion of its plants. If we make the best use of our advantages, it is impossible to imagine the extent or limits of accomplishment." — LUTHER K. YODER, *Secretary*, 69 Pleasant Street, Ayer, Mass.

1896

The Secretary broke away from M.I.T. on July 23 to go to New Hampshire for continued rest and recuperation, and he returned to work again at M.I.T. the first of October. — Rockwell made a trip to

1896 *Continued*

the family home at Harriman, Tenn., in early August, and was met with very hot weather, the natives claiming that it was the most extreme heat in years. To add to southern discomforts, the peaches were \$8.00 a bushel and there were no watermelons to be had.

Wayne wrote from Indianapolis in June that he had been re-elected as a perpetual honorary director of the Scientech Club. He has been a director ever since the founding of the club and was continuously chairman of the membership committee. Wayne visited M.I.T. the last of August while he was visiting a niece in New England and making an eastern trip which included Springfield, Mass., and York, Pa. — Professor Jacobs has had a very busy summer at the University of Vermont, with over 1,200 air training students and his work as state geologist and watcher of the seismograph. He has also been interested in a process for extracting magnesium from asbestos mines tailings. The result is that he has been unable to make any long sojourn at his camp on Lake Champlain.

Billy Anderson stopped over in Boston early in July on his way to his summer home at Biddeford Pool, and he later wrote the Secretary that the gasoline shortage in Maine circumscribed their movements, and the taking of land by the Army had reduced the golf course to seven holes. Billy's son, William G. Anderson '41, is a lieutenant, senior grade, in the Navy. — Bradley Stoughton is again serving a term as dean of engineering at Lehigh University. He is spending much of his time in Washington, where his residence is 2021 16th Street Northwest. — Alba Warren has retired from the United Gas Pipe Line Company and is now at 520 West Mallory Street, Pensacola, Fla.

Two very chatty, newsy letters arrived from Con Young in June and August respectively, giving a lot of interesting recollections of student days and identifying No. 236 in our class picture as Willard B. Vose. This brought back some recollections of humorous occurrences in which Young and Vose participated. In June, Con was a little pessimistic after a winter on Cape Cod, during which his health and Mrs. Young's health had not been the best, and there were the difficulties of rationing and food. He had planted a garden, which was doing well. In August, Con referred to his singing teacher and his own singing over the radio. He also recalled Freddy Walker, Bert Thompson, and Will Hedge. His health and Abby's health had improved very much during the summer, and he had accomplished a lot of carpentry work. His victory garden had done splendidly and Abby's flowers had bloomed profusely.

The Secretary has had quite an exchange of correspondence with Victor Shaw during the summer. At last accounts he had given up his work in the Newhall Ranger Station and was located at Sandberg, Calif., where his plan was to do some writing. Sandberg was formerly on the Old Ridge Route, but the new Highway 99 in California has made it almost a ghost town, frequented more or less as a resort. Shaw was renting a house in Liebre Canyon, which lies inside the Los Padres National Forest. — Frank Howard is reported to have retired from the Erie Railroad, and is at 522 North Maple Avenue, Ridgewood, N.J. — Class

mates will be interested to know that Dave Beaman became a grandfather through the birth of a daughter, Deborah, on June 6, to his son, David Beaman, Jr., '38.

Classmates may have noticed during the summer considerable newspaper publicity given to statements by Paul Litchfield on the rubber situation. Paul took an optimistic point of view on the quality of synthetic rubber for various purposes, including tires, and also the amount that will be increasingly available to meet our total needs before many months have passed. In July, the Goodyear Company dedicated a new \$1,325,000 laboratory in Akron. — Dr. Coolidge has likewise been receiving additional publicity, first as recipient of honorary membership in the Dental Society of the State of New York, and second, in connection with development of apparatus of still higher millions of volts.

This year is becoming very hard on our members, and it is with great regret that report is made of the death of six more men in addition to those previously recorded this year.

Thomas W. Bailey died in Del Rio, Texas, on November 18, 1942. He was a graduate of Course I, and had engaged in civil engineering and highway work in Kingston, Mass., and in Oklahoma and Texas. He served abroad as a captain in the Engineers in the first World War. — Stanley Howland died in Asheville, N.C., on September 21, 1942. He had been in poor health for a long time. He was prominent as a member of Course IX in various student activities and athletics from 1892 to 1897, although he was never graduated. He carried on his father's railroad business in North Carolina and was also prominent in military affairs in the first World War. — Vance C. Osmont died on February 8. He was with us as a student in Electrical Engineering for two years. He followed a career of mining engineering in Mexico and in the West.

Captain Frederick H. Pratt died on July 7 at Pendleton, Ore. He had been in poor health for some time. He was a student in Chemistry with us in 1892-1893 and in 1895-1896. He followed the sea and became a master of ocean steamships. He married Edith M. Haynes of Cohasset. For the past 20 years he had made his headquarters in Portland, Ore. The body was brought home for burial in Newton, Mass. — Herbert C. Waldo died in Groveland, Mass., on February 18. He was with us only in our freshman year. He had been a letter carrier in Haverhill for many years.

Frederick H. Walker died very suddenly in Philadelphia on June 2. He was with us as a student in Mechanical Engineering in our first two years and was very active in class and student affairs. His lifework was mainly in the line of sales engineering. Those of us who attended the Wianno reunion in 1921 will recall how the presence of Walker added to the joy of the occasion. — CHARLES E. LOCKE, *Secretary*, Room 8-109, M. I. T., Cambridge 39, Mass. JOHN A. ROCKWELL, *Assistant Secretary*, 24 Garden Street, Cambridge 38, Mass.

1897

Your Secretary regrets that the only news that he can offer in this issue is the

THE TECHNOLOGY REVIEW

record of the passing of three of our classmates. John C. Soley, I, of Melrose, Mass., died on July 4. He was a member of the firm of Soley and Blair, Inc., 77 Summer Street, Boston, Mass. — Salmon W. Putnam, 3d, II, died at his home in Lunenburg, Mass., on July 12. He had been a member of the designing department of the Putnam Machine Company of Fitchburg for many years until it was sold to Manning, Maxwell and Moore, Inc. of Boston. At the Institute, he was a member of the Sigma Alpha Epsilon fraternity. He was a 32d degree Mason and was a widely known Fitchburg sportsman. In 1941 he gave his Fitchburg home to the Fitchburg Council of Girl Scouts.

Frank H. Keisker, IV, construction engineer and designer, who had been employed at the naval base in Bayonne, N.J., for 13 months, died on August 19 at the age of 68. He was a native of Louisville, Ky. From 1927-1932 he worked in Hanover, N.H., designing buildings for Dartmouth College. Previous to his work for the Navy, he maintained an office for architectural design in Philadelphia. He leaves a widow and one daughter, Lieutenant Alice E. Keisker of the Army Nurse Corps, who is now in Australia. — JOHN A. COLLINS, JR., *Secretary*, 20 Quincy Street, Lawrence, Mass.

1898

The Polytechnic Institute of Brooklyn gives two honorary degrees each year. They are given to those who by reason of exceptional ability and imagination have contributed in an outstanding degree to science, to industry, or to the nation, and whose contribution has been chiefly for the benefit of their fellow men and not for themselves. This year our own Lester Gardner was one of the two so honored. For his distinguished services to the profession of aeronautical engineering and to the field of aviation, an LL.D. degree was conferred upon him at the commencement exercises on June 2, with a citation and a full academic ritual. The encomiums and speeches and the meeting which did him honor were at a banquet given at the University Club in New York by the Polytechnic Institute. Many men distinguished in the aeronautical field were there, including four of Lester's classmates: Allyn, Cottle, Treat, and Winslow. Lester gave them a splendid luncheon that day. At the banquet they were called upon to rise and salute their classmate. George Cottle said that it was a delightful and memorable occasion.

We quote from a letter written to Lester by the chairman of the education committee of the Polytechnic Institute: "The corporation of the Polytechnic Institute of Brooklyn, in recognition of your distinguished services to the profession of aeronautical engineering and the field of aviation, desires to confer upon you the honorary degree of doctor of laws at the institute's commencement in June of this year. The basic services which you have rendered in the field of aviation, in the establishment and development of the Institute of the Aeronautical Sciences, in the publication and direction of scientific and popular journals, and in the founding and development of the great library of the institute has claimed our attention as a most important and integral part of the work of the great profession and

1898 Continued

industry of aeronautics, and it is our hope that we may have the privilege of recognizing it. . . .

From the Alumni Office we learn that Clarence Goldsmith is a colonel in the Office of Civilian Defense, 1015 Dupont Building, Washington, D.C. Other recent new addresses include the following: Dr. S. Fosdick Jones, Hotel Huntington, Pasadena, Calif.; Bryce Metcalf, 15 East 69th Street, New York, N.Y.; Charles R. Ballou, 165 Huntington Avenue, Norwood, R.I.; Frank I. Peckham, care of Mrs. Lena G. Lennan, 20 Brenton Street, South Portland, Maine; Arthur C. Lawley, 14602-18 Southwest, Seattle, Wash.; Howard B. Collins, Vanadium Corporation of America, Monticello, Utah; Allen H. Cox, South Hadley, Mass.; James R. Guy, 529 New York Avenue, Norfolk, Va.; and Karl W. Waterson, 56 Whittredge Road, Summit, N.J.

Last week George Cottle had to make a trip to Cape Cod, and he stopped to see Joe Sears at Dennis, Mass. Joe retired from business in 1930 and has been living a quiet life in the country. One of his present activities is raising turkeys.

We have to report the death of the following classmates; Herbert L. Cobb, on January 24; Richard Mommers, on June 18; Edward W. Roaf, on February 1; and Winfred D. Hubbard, on August 14.

Dick Mommers went through all four years with us and was graduated in Chemistry. He soon got into the sugar business, and at the time of his death he had long been general superintendent of the American Sugar Refining Company, Key Highway B, Baltimore. He resided in Baltimore, and at one time was superintendent of the big Baltimore refinery. We remember the pleasure of running into him by accident in 1926 on the Carquinez Ferry near San Francisco. He was on a trip of inspection of the beet sugar industry of the West. The class records say that he had three children.

Herbert L. Cobb was graduated with us in Electrical Engineering and followed that profession. He was with the Western Electric Company at Oak Park, Ill., and lived at 238 North O'Keefe Street, Cassopolis, Mich. In 1913, he reported having six children. — Edward Roaf, who was in the Course in Civil Engineering, lived at 22 Boardman Street, Newburyport, Mass.

Winfred Hubbard was graduated with our Class in Sanitary Engineering. He was born in Concord, Mass. After graduation he served in the department of water works and sewers in Concord until 1906, when he joined the department of water supply of New York City. At the time of his death he was division engineer of the Catskill-Croton division of New York's department of water supply. He was in charge of the maintenance and operation of the watershed reservations, pipe lines, aqueducts, and so on, north of the Yonkers city line. He designed the sewage disposal plants for Chichester, Pine Hill, and Mount Kisco. His home address was 145 Pearl Street, Kingston, N.Y. He is survived by a daughter, a sister, and two brothers. — ARTHUR A. BLANCHARD, Secretary, Room 6-421, M.I.T., Cambridge 39, Mass.

1900

During the summer, Harry Osgood sent in the following from his new home in

Culpeper, Va.: "Enclosed you will find a clipping which seems apropos of my wanderings and finale. There are 250 acres of undiluted work, with farm equipment, beef cattle, dairy cows, horses, hogs, poultry, pigeons, dogs, cats, and rats. We have white and colored help, and lots of fresh air. Come and see me sometime, if we ever outlive this war." Make a note of this, as Harry would be glad to see any of us. The clipping with full directions and the map are on file here.

Jim Killian, Jr., '26, Executive Vice-president of the Institute, answered my letter as follows: "It was kind and friendly of you to write about my new title, and I am proud to have the congratulations of the Class of 1900. I hope as an officer of the Institute that I can be worthy of your vote of confidence."

Wastcoat sends in a clipping from the August issue of *Yachting* in regard to the death of Morgan Barney, XIII. The clipping read as follows: "Morgan Barney . . . Born in New Bedford on Sept. 25th, 1878, he died in Stamford Hospital on June 22nd, 1943. He was the son of George and Juliet A. M. Barney and a descendant of the Howlands of New Bedford.

"As a child, his summers were spent on Nashawena Island where his parents owned a house at Quick's Hole. Later, his vacations were spent at South Dartmouth where he built several small sail boats with which he won races against boats designed and sailed by older and more experienced men. Having thus come by his love for things nautical, he attended the Mass. Institute of Technology, graduating from the course of Naval Architecture in 1900. He then came to New York, where he worked with the well-known naval architect H. C. Winttingham on yachts and commercial vessels. At this time the smaller steam yachts were being replaced by the motor yacht due to the advent of the internal combustion engine. This called for a new type of hull and Mr. Barney's vision led to his opening a designing office of his own where he produced many of the outstanding large motor yachts of the time, developing several features still regarded as fundamental in the yachts of today. His designs were considered as being particularly seaworthy, distinctive in appearance and economical in operation. He also designed several cruising yachts. He preferred to devote his time to this class but the trend of the time was toward power.

"During World War I, he used the State Pier at New Bedford as a shipyard where he converted several iron ore barges to oil tankers with the use of concrete, an ingenious conservation of essential materials and space. He was also associated with the late Hudson Maxim in the design of a torpedo-proof ship, and in the propulsion of torpedoes. He worked with British commissions on secret devices to combat the submarine menace. He was one of the older members of the New Bedford Yacht Club, was a member and measurer of the Indian Harbor Yacht Club, including the period of the eventful P boat contests, and was one of the amateur crew of 'Mineola' in her historic contest with 'Yankee.' He was one of the founders of the New York Technology Club.

"At his request, his ashes were buried in Long Island Sound, the ceremony taking

place on a yacht he owned at the time of his death. A poem, beautiful in its nautical appeal, was composed for the ceremony."

In June we received the following letter from Mrs. B. Gould Macintire: "This is to notify you of the death of B. Gould Macintire at Dugway Proving Ground, Toole, Utah, on May 6, as the result of accidental exposure to gas during an Army test. He had been with the Chemical Warfare Service at Edgewood Arsenal, Md., since 1921, but was transferred to the Utah area in December, 1942, for special duty.

"His survivors are his widow, Eva Osgood Macintire, and two sons — Bradford, of Perryman and Baltimore, Md., and Sergeant Gould D. Macintire, who is with the armed forces in England."

The Alumni Fund sent in notice of the death on February 14 of Harry H. Hamlen, VI, at his home in New York City. — The Boston *Herald* of July 22 carried the following notice: "William R. Hurd, 64, an executive of the United Shoe Machinery company, died last night at his home here at 89 Lothrop St., Beverly, Mass. Born in Milton, he was the son of the late Mr. and Mrs. Edward Payson Hurd. He was a graduate of the Mass. Institute of Technology and had lived in Beverly for 35 years. He had been retired for 10 years. A member of the Quarter Century Club of the United Shoe Machinery company, he also belonged to the Beverly Chamber of Commerce and the Salem Country Club. He leaves his widow, Mrs. Ethel H. Hurd; a sister, Mrs. Lawrence T. Sawyer of Chatham; and a brother, Malcolm, of Milton." Hurd was in Course II and was fullback of the freshman football team.

Prof. Bugbee called in July and informed us that he is now with the Bureau of Mines, working out of Hanover, N.H., in search of rare metals. — Blair wrote in as follows: "If it is not too much trouble, will you send me a list of the names and addresses of our classmates in the New York area? I want to try to have as many as possible of them get together for a luncheon. If we can put that over, we might later try something more ambitious."

The following classmates were seen or heard from this summer: Draper, Patch, Leary, Walworth, Fitch, Ziegler, Burns, Neall, Beekman, and Brigham. — C. BURTON COTTING, Secretary, 111 Devonshire Street, Boston 9, Mass.

1902

News of the sudden death of Walter Owen Teague on July 30 from coronary thrombosis has been received from Mrs. Teague. Walter was born on March 11, 1879, in Lowell, Mass., and after receiving his degree in Naval Architecture at Technology was engaged for some time at the Fore River Ship and Engine Company in Quincy, Mass., and the New York Shipbuilding Company, Camden, N.J. In 1904-1905 he lectured in mechanical engineering at the school of mines, Queen's University, Kingston, Ontario. Later at Purdue University he served as assistant professor of experimental engineering, in charge of engineering laboratories. For several years he was with the Associated Mutual Fire Insurance Companies in Boston. In World War I, he served as inspector of naval construction at the Charlestown Navy Yard, with the rank of lieutenant commander. Later he

1902 *Continued*

was with the Grinnell Sprinkler Company in Providence. Of late years Walter had been in the insurance business in Akron, Ohio, where he was president of the M.I.T. Club of Akron in 1942. At the time of his death he was with the Goodyear Aircraft Corporation. He is survived by his wife, Kathleen Teague, 2314 First Central Tower Building, Akron; two sons; and a daughter.

Henry L. Green, a colonel, retired from the Army for a second time on September 1, according to a release from the public relations branch of the Fourth Service Command. Green had been extremely busy building and rebuilding army camps, including those at Fort Jackson, S.C.; Camp McClellan, Ala.; Camp Shelby, Miss.; Camp Blanding, Fla.; Camp Wheeler, Ga.; Camp Croft, S.C.; Camp Davis, N.C.; Camp Claiborne and Camp Livingston, La.; Camp Gordon, Augusta, Ga.; and the Army Service Forces Depot at Conley, Ga. — BURTON G. PHILBRICK, *Secretary*, 246 Stuart Street, Boston 16, Mass.

1903

To celebrate our 40th anniversary, 19 of the Class, with six wives, reported at the Griswold Hotel in Groton, Conn., on June 25-27. The following were present: Aldrich, Atwood, Bradshaw, Cheney, M. H. Clark, Dooley, Ferry, Gould, Haskell, Joyce, King, Osborn, Parker, Peaslee, Regestein, Stiles, Yerxa, Eustis, Cushman, Mrs. Eustis, Mrs. Ferry, Mrs. Joyce, Mrs. King, and Mrs. Yerxa. With the exception of Mrs. Ferry, who stayed only a short time, and Peaslee, who arrived late, we appear in person in "The Institute Gazette" section of this Review. We spent from early Friday evening until late Saturday evening renewing acquaintances, discussing old times and modern trends, and looking over the Secretaries' scrapbook and "senior folio." Ferry and Stiles tried out the golf course, and several of us enjoyed swims in the pool on the hotel grounds. We all ate together at one long table, with Myron Clark doing the pouring. Although the food was limited as to quantity and choice, and the service was sometimes "catch as catch can," everything was taken in good part, and a thoroughly good time had. Mrs. Yerxa expressed the feeling of all of us when she said she "wouldn't have missed it for anything," and that she was definitely a part of '03 from now on.

At the business meeting on Saturday evening, many letters of greetings and regrets from absent men were read and appreciated. The present Secretaries reported on conditions, numerical and financial, and were given a vote of confidence and re-elected for another five years. We also voted to continue the annual informal dinner and to have a five-year reunion on a week end in 1948. The party broke up gradually on Sunday, and our only regret is that there were not more of the Class there. Ralph Howes did yeoman service in personally contacting many men in New York City, for which the Secretaries were grateful. It was with extreme regret that he had to forego being present himself on account of the illness of his wife. Two others were prevented from being present by illness in their immediate families, and they sent regrets at the last moment. Undoubtedly, transportation limitations and war work were responsible for the small attendance.

But there was also some lack of interest, individual inertia, and insufficient incentive and encouragement. For the benefit of those men who were not there because of these reasons, let us say that we always have a good time and all say they are glad they came. (One man even thanked us for getting him to come.) Let us further remind you that we are all getting on in years, whether or not we like it, and there will be fewer and fewer available men to gather as the next 10 years come and go. It seems to us that these reunions are well worth an extra effort on our part, and that we ought to make the most of them. Make a note now that there will be a dinner in Boston during the winter of 1943-1944. Due notice will be given. Plan to let nothing interfere with your attendance.

Charles W. Beverstock, I, died at his ranch in Newberry, Calif., on March 13. He came to us from Keene, N.H. For many years he was in the structural steel contracting and constructing equipment business on the West Coast. He was well known and popular with everybody, especially with men who worked with him. Before going to Los Angeles, he was with the Pennsylvania Railroad at Harrisburg, Pa., for 35 years. He leaves his widow, Mrs. Bertha M. (Townsend) Beverstock, and a son, Roswell C., who at the time his father died was United States vice-consul at Caracas, Venezuela. — At our reunion a very interesting greeting concerning Jim Doran's family was received from Jim's brother John. Since then we were grieved to receive notice that John Doran has died. Our sympathy is extended to both families.

We had a pleasant call from Hunter, I, early in June, too early for him to stay over for the reunion. It was the first time that he had been in Boston for many years, so he looked up Jack Howard and others at the Institute and reminisced with Cushman for an hour or more. He is assistant engineer in the city engineers office in Chicago. Formerly he had been with the Pennsylvania and other railroads, and has had a chance to visit members of the Class in the West. We were glad to see him, and hope that others visiting in Boston will look us up. — FREDERIC A. EUSTIS, *Secretary*, 131 State Street, Boston 9, Mass. JAMES A. CUSHMAN, *Assistant Secretary*, 441 Stuart Street, Boston 16, Mass.

1904

No notes from 1904 have appeared since the December, 1942, issue. Scarcity of material must be caused by the war, as that seems to be the reason for the lack of most everything nowadays.

Under date of December 9, Charlie Locke '96 sent in the following: "Guy C. Riddell, New York consulting engineer, is now in Washington as chief, mining projects, export branch, Board of Economic Warfare, which board is concerned with the development and production of strategic material and the export of adequate equipment and plant for American operations abroad. The principal objective of the Office of Exports is to direct the flow of commodities in commercial export channels in a way to make it a positive economic weapon in the successful prosecution of the war."

Last May, Holcombe forwarded to me a brief note from Selby Haar in which Haar said he had undergone an operation about

a year ago and had fully recovered. He also said he had been talking with Easterbrooks, who had been quite ill around the first of the year but was again in good health. On the bottom of Haar's letter, Holcombe wrote: "My new job with the Alien Property Custodian keeps me busy, as I have some 4,000 applications to prosecute and a staff of 30 attorneys and clerks to do it. But I miss having no three-day reunions to go to."

I can truthfully say that Holcombe is not alone in his feelings about the reunions, but, of course, all kinds of transportation, food supplies, and hotel accommodations were worse last June than a year ago, and any reunion attempt was impossible. Next June will be our 40th and we all hope to be able to do something to celebrate. On the last week end in June, the regular reunion time, Harry Kendall invited Ed and Mrs. Parker and me to his home in Westminster, Mass., so the reunion date was kept intact.

Dennie K. Keller was married on June 15, to Mrs. Mildred Zizkler Wagner of Northport, Long Island, N.Y., the ceremony taking place in that town, where they spent the summer.

Andrew Otterson Miller died on May 13 at his home, 145 East 49th Street, New York, after a brief illness, at the age of 58. He was the son of the late Charles Bailey Miller and Emily O. Miller. He attended school in Weimar, Germany, and prepared for college at Mohegan Lake Military Academy, Mohegan Lake, N.Y. He was a descendant of Samuel Clark, who came in 1636 to Connecticut from Devon, England, where the family estate is still occupied by the Clark family. His forebears were among the original proprietors of the township of Bedford, N.Y. He was a great-great-grandnephew of General Samuel Clark, who was commissioned a lieutenant by General George Washington at White Plains, N.Y. Surviving Miller are his wife, the former Gretchen MacDonald, and two sons, Lieutenant Andrew O. Miller, Jr., and Lieutenant Dudley L. Miller, both of the United States Army.

Carl King, general superintendent of the Palmer plant of the Wickwire Spencer Steel Company, and one of the nation's foremost authorities on the manufacture of wire rope, died suddenly at his home, 511 North Main Street, Palmer, Mass., on June 25, following a heart attack. Although he had not been really well for some time, having suffered a severe illness about six years ago, he had recently been in comparatively good health. He was born at Lawrence, Mass., on June 29, 1880, the son of Henry C. and Nellie F. (Abbott) King. He was graduated from Phillips Academy at Andover in 1900. He was married on May 14, 1907, to Emily Beekman Dunning of Brookline, who survives him.

After his graduation from the Institute, King taught two years in the Mechanical Engineering Department, after which he went to Worcester as assistant superintendent of the rope mill of the American Steel and Wire Company. Three years later he started a new rope mill for the same company at New Haven, Conn. When Wentworth Institute in Boston opened in 1911, he took charge of the courses in strength of materials and he also taught in the mathematics department. On July 1, 1920, he became superintendent of the rope mill

1904 Continued

of the Wickwire Spencer Steel Company in Palmer, and he was also a member of the operating committee for the whole company. In 1925 he became superintendent of the entire Palmer plant. Last fall the Palmer plant was the first company in New England to be honored by the award of the Maritime "M" and the Victory Fleet pennants, and a gold star award was added recently.

King was a member of the American Petroleum Institute; the wire rope committee of the American Petroleum Institute; the Manufacturers Subcommittee on Wire Rope; the technical committee of the Wire Rope Association; the subcommittee of the American Petroleum Institute's standardization committee; the American Society of Metals; the American Society of Mechanical Engineering, and the Iron and Steel Institute of London. He was also a director in the American Mason Safety Tread Company of Lowell, Mass. Besides his widow, he leaves a son, Albert D. King of Springfield; two daughters, Mrs. Kenneth H. Marcy of Palmer, and Mrs. Bostwick H. Ketchum of Woods Hole; a brother, the Rev. Philip King of Plantsville, Conn.; a sister, Helen King of Ashby; and six grandchildren.

Noel Chamberlin died at the home of his sister, Mrs. Horace C. Fisher, at Cataumet, Mass., on August 15. He was born in Boston, the son of Alice Moore and George N. B. Chamberlin. His grandfather, Daniel Chamberlin, was the owner of the old Adams House in Boston, and the Chamberlin family were pioneer settlers of Wolfeboro, N.H. After his graduation from Technology, Chamberlin became a landscape architect. He achieved wide renown in his profession, opening his own office in New York in 1923. Among the country estates he created were those of Charles M. Schwab at Loretto, Pa., and Mrs. Daniel Guggenheim at Sands Point, Long Island. In the first World War he was an officer on the staff of Delos C. Emmons, now a lieutenant general. — Henry C. Schaefer died in Buffalo, N.Y., on November 11, 1942. — HENRY W. STEVENS, Secretary, 12 Garrison Street, Chestnut Hill 67, Mass. AMASA M. HOLCOMBE, Assistant Secretary, 3024 Tilden Street, Northwest, Washington, D.C.

1905

The recent announcement of a dues assessment, the first in three years, was a double-barreled missile. It brought not only funds necessary to carry on the work of the Class but news in abundance from both the home and fighting fronts. For instance, one man writes: "I appreciate your efforts very much. I miss Bob Lord." Of course, he meant both statements. Good old Bob and Grove and Ros. In my eight years as Secretary, I have appreciated how much hard work my predecessors have done and that their labors of love kept the old '05 spirit glowing.

Here's a family head over heels in the war. Vice-admiral Russell Wilson, I, gives his recent history: "1939-1940, commander of a battleship division of the Pacific fleet; 1941, superintendent of the Naval Academy in Annapolis; 1942, chief of staff to Admiral King and deputy commander in chief of the United States fleet; 1943, retired as vice-admiral for physical disability and now on active duty with Navy Department. I have

one son a lieutenant, one son-in-law a commander, a daughter in the Navy Department, and another son-in-law a lieutenant commander."

Morris H. Whitehouse, IV, writes: "You probably have been reading the past year or so how the Northwest, especially around Portland, has been doing things in shipbuilding. That, of course, necessitated many utilities to take care of our growth in population. One of my partners, Walter E. Church '21 joined the Corps of Engineers and is now a major. Another partner joined the Engineers in a civilian capacity. My other partner and I have been carrying on, and herewith please find our record to date in war work. Our first important commission was the Barnes Military Hospital for the United States Quartermaster and Surgeon General. After that, our work consisted of 500 housing units in the Portland area, association on 1,500 units at Vancouver, Wash. (six miles from Portland across the Columbia River), another 100 units in Vancouver, and 100 units in Longview, Wash. We have just completed plans and specifications for five emergency school buildings for the Public Buildings Administration. These will serve Vancouver, which is the growing city where the Kaiser Shipbuilding Corporation has been making such a great record. One of the aforementioned typical school plans was selected by the Brazilian officials from our plans on file in Washington, D.C., to be sent to Brazil as a model for study. We have also given our services free in designing and superintending Portland's victory center and in extensive alterations to a building to house the main Red Cross center. We are at present working on a few minor preliminary postwar buildings and looking forward to preparing data and plans on much larger projects."

Edward C. Smith, V, writes that after reaching the pension age after 38 years with National Carbon Company of Cleveland, he volunteered to remain and help in their war program, as nearly 100 per cent of their product goes into war work. His son, Edward F., is a private in the Air Forces at Tomah, Wis. He is technical librarian of a radio school. Smith has spent 20 years at his hobby of historical and genealogical research and was coauthor of a book: *History of the Town of Middlefield, Massachusetts*, with 200 illustrations and 250 pages of family genealogies. He has also written articles for the *American Genealogist*. He sees A. L. Smith, V, occasionally at American Chemical Society meetings. A. L. is still at Nela Park with General Electric. — Hub Kenway, II, writes on the letterhead of the Killington Manufacturing Company, Inc., of Rutland Vt., that this new side line is the joint enterprise of three durable '05 men — Grove Marcy, II, Bill Green, VI, and himself. It is a husky infant industry, Hub says, from which they hope to derive large profit in the next 20 years. Hub's son and junior partner is in command of a ship in parts unknown, and his son-in-law, Lieutenant Colonel Haydon, has been in North Africa since last December.

Grafton Perkins, V, is as terse as his Swan Soap (plug No. 3) advertising. He writes: "Sons in service, two: one a lieutenant in the Naval Reserve, whereabouts unknown; one an aviation cadet, currently at Goldsboro, N.C. Grandchildren: four —

three boys and one girl. My health is excellent; hair retention, fair; waistline, fair. As for war work, I served a short period in charge of public relations in the Office of the Rubber Director, but long since have been back on the job as vice-president and advertising manager of Lever Brothers, Cambridge." By the way, our reference to Perk's "The Perkins Grandchild Company" brought several requests for a reprint of that classic. — Elmer W. Wiggins, V, wrote that he is "still trying to do my bit to help get this war over." He continues to conduct his Army primary school in Texas and believes he has the best school of the kind in the country. Wig's son, E. W. W., Jr., is in the Navy and hopes to become an aviation instructor. Wig has four grandchildren, all girls.

Chuck Emerson, XI, after expressing glee in finding class dues out of range of the high cost of living, writes: "Like most of the engineers in private practice, we went into war work when municipal work fell off. We served as architect-engineers from October, 1940, to October, 1942, for the Fort Knox extensions; from April, 1942, to March, 1943, for the Walnut Ridge, Ark., air base and supplementary air fields; and in similar capacity on some housing developments in the East and Middle West, with a generous number of special reports and special assignments for various civilian agencies such as the Federal Housing Administration and the Federal Works Administration. Hence I have been riding the rails and spending more of the summer months in the sunny South than I would care to repeat during the next two years. However, I feel the effort may have helped somewhat in getting Uncle Sam's boys ready to bear their heavy burdens. Since tapering off from government construction, we have been able to secure a reasonable volume of postwar planning in our basic line of work, water works and sewerage. I had the pleasure of lunching with R. S. Beard, I, a few weeks ago. He is now a Colonel in the Corps of Engineers and is serving as procurement officer for the North Atlantic division, with headquarters in New York." The "we" in Chuck's letter means, of course, the firm of Havens and Emerson, whose letterhead advertises that they do consulting engineering in sewerage and sewage disposal, water supply and purification, garbage collection and disposal, treatment of industrial wastes, and so on, with offices in Cleveland and New York.

Leon G. Morrill, V, has a son who is a lieutenant in the Navy, Office of Procurement; a daughter, who is married; and two grandchildren. He retired after 35 years in the printing-ink business. — Robert E. Wise, I, says he has been marooned (imagine that) for 20 years in Los Angeles. He was in the architectural and engineering business for six years, and for the past ten years has been with the Los Angeles County Flood Control District. His two sons, Bob and John, were graduated from the University of California and are now lieutenants in active service in the Naval Reserve. He made a round trip of 11,586 miles in 1941, including Boston, but didn't allow us to stage an impromptu lunch in his honor. Shame, Bob! — R. L. Young, V, says he tried to retire, but the war "shamed him" back into harness again, probably with

1905 Continued

Champion International in Lawrence. Bob has no grandchildren. One son was just married and is in the Coast Guard amphibious forces in the Far East. The other boy is in the Army Air Forces, chemical division. — Percy G. Hill, II, says: "I could tell you of some extremely interesting things that are going on in the communication field right now, but to do so and have it printed might cause me no end of embarrassment. My son Lyman '36, who has a pre-war baby, is still working for the Federal Telephone and Radio Corporation. I have not had any conspicuous promotions, although I have worked harder the last year than at any time during the last ten years. I haven't even had time for golf. In anticipation of the ultimate (retirement), I have bought an 80-acre abandoned farm in the hills of New Hampshire, where my permanent address will some day be, I hope."

Harry Wentworth, VIII, writes: "Nathan is a captain in North Africa. A note I just received from him refers to the father and sons' tournament as follows: 'I hope that you and Vin succeeded in holding up the family laurels. Out here we have trouble enough in putting together an occasional 19th hole without worrying about the customary 18. Actually, there is a little nine-hole affair in the vicinity which is reputed to be not bad, but I understand our French allies are camped thereon, so I have made no attempt to investigate the matter further.' Gordon is a first lieutenant, also overseas, and Vin is running a crew of 180 people and working a double shift himself. He did quit for three hours one Saturday afternoon recently to play in the father and sons tournament again this year. I have accumulated four grandchildren."

A. E. Russell, XIII, is still chief draftsman (machinery) at the Navy yard in Boston. He is keeping 170 men and women busy. He often saw Gib Tower while he was at the yard. — Roy Walker, II, has a son, Hiram Alden, a graduate of Drexel Institute of Technology, who is now a lieutenant, junior grade, in the Navy. At last report he was in north African waters. Roy promises (not the first time) to positively attend the next reunion after the war. Here's hoping it may be in 1944, Roy.

Fred Guibord, V, says: "If it will not bring notoriety or disgrace to the Class, you may announce that I am now a septuagenarian." Fred was 70 on August 22. Being the oldest member of the Class is some kind of an honor. — Arthur Gerry, II, is giving his services temporarily to the Belknap County, (N.H.) Extension Service, as emergency farm labor assistant. Wallace N. NacBriar, II, wrote while flat on his back in a plaster cast in St. Luke's Hospital in San Francisco. He told of a fall from a ladder and of fracturing a vertebra. He expected to be discharged completely cured after a stay of over two months. Here's hoping that by the time he reads this he will be 100 per cent again and mindful of the proverb that men of 60 should not fall off ladders. Mac's two sons are in the service, one a lieutenant in the Air Corps in North Africa, and the other a lieutenant teaching mathematics at the officer candidate school at Camp Davis, N.C. — Your Secretary, having no sons, proudly reports that his oldest daughter is an ensign in the Navy Nurse Corps, and is now located at the Brooklyn Naval Hospital.

From his daughter, Mrs. L. R. Jourdomais, we learned that Albert W. Walker, XI, died at Great Falls, Mont., on June 15, after a lingering illness. She expressed her father's constant pride in '05. Bert was for many years superintendent of the United States Bureau of Reclamation at Fairfield, Mont. — FRED W. GOLDTHWAIT, *Secretary*, 274 Franklin Street, Boston 10, Mass. SIDNEY T. STRICKLAND, *Assistant Secretary*, 137 Newbury Street, Boston 16, Mass.

1906

The following item is taken from the *New York News Record* of July 29: "George W. Burpee was elected president of General Aniline & Film Corp. yesterday at a meeting of the board of directors at the company's offices. Mr. Burpee has recently been executive vice-president of American Export Airlines and for many years has been a member of the engineering firm of Coverdale & Colpitts, where he handled a number of industrial undertakings. He is a graduate of Bowdoin College, and of Mass. Institute of Technology. He is a director of the American Society of Civil Engineers and a past president of the American Institute of Consulting Engineers." The Secretary appreciates Harold Coes' interest in forwarding the same item of information and a copy of his letter of congratulations to George.

Henry S. Mears, III, is at Clark Fork, Idaho, where he will do mine unwatering and sampling for the Whitedelf Operating Company, recently organized in Boise.

Under the date of May 12, Mrs. R. T. Jackson wrote that Ralph, who took Course IV, is a major in the Corps of Engineers and was port engineer at Casablanca. At the time of her letter he was hospitalized at the Halloran General Hospital, Staten Island, N.Y. The Secretary is happy to inform classmates that Ralph expects to go back into the service shortly.

The Boston *Globe* of May 13 included the following notice of the death of Henry B. Hallowell, III, who was affiliated with our Class although he obtained his degree in 1907: "Major Henry B. Hallowell, 58, World War veteran and a resident of Kennebunk Beach for 25 years, died at a local hospital today following an operation. A graduate of Massachusetts Institute of Technology in 1907, he was for many years a mining engineer in the Northwest and in Canada. He also served as an assistant to the general manager of the Reed Prentice Company of Worcester and was a life member of Portland Lodge, A.F. & A.M. He leaves a wife and a son, John Hallowell, U.S.N.; a daughter, Mrs. Lawrence Doane of Kennebunk; a brother and three sisters." The Secretary was in Kennebunk on September 24 and met a citizen who was well acquainted with Major Hallowell, who had settled in Kennebunk at the conclusion of the first World War and had lived there ever since, leading a very busy rural life in that beautiful old New England town.

William H. Balls, XIII, passed away on February 3. He was a professor of drawing at the South Philadelphia High School. — David S. Weil, II, died on August 25, 1941. Weil lived at 91 Central Park West, New York City. — JAMES W. KIDDER, *Secretary*, Room 801, 50 Oliver Street, Boston 10, Mass. EDWARD B. ROWE, *Assistant Secretary*, 11 Cushing Road, Wellesley Hills, Mass.

THE TECHNOLOGY REVIEW

1907

In the field of vital statistics among '07 men during the summer, we have to record one marriage, the birth of one daughter, and three deaths. On July 18, I received a note from Frank MacGregor saying: "Do you really want a news item? Here it is: Duke Lewis is getting married." My letter of warm congratulations to Duke eventually brought a reply: "There were so many vital statistics offered at our last reunion at Oyster Harbors that I thought I ought to contribute my share. It may be late in the day but I am glad to be off the list of 'old bachelors.' Now we can concentrate on Frank MacGregor. Gertrude M. Wilharm and I were married July 17 at Cold Spring Harbor, Long Island, N.Y. She is a graduate of the University of Minnesota, a former newspaperwoman, and is now with an advertising agency. For a time our life will be divided between New York, where she is busy, and the farm in Harmony, R.I., where I am busy. When the world becomes more normal I expect to be living in and active again in New York." — A memo from Charles E. Locke '96 says: "Lucile and Larry Hampton announce the birth of Elizabeth Mary, 6 pounds, 12 ounces, on August 9." Larry was married the second time in 1930 and has two other children, now aged about seven and five. We who are *grandfathers* of children of these ages or older salute you, Larry, on being the father of the youngest '07 juniors.

On September 7, G. Edward Prouty died at his home in Littleton, Mass., after a long illness. Ed entered the stockbrokerage business in Boston immediately after graduation, and for 20 years was associated with the Boston and New York stock exchange firm of Hayden, Stone and Company. In 1927 he became vice-president of A. B. Conant and Company in Boston, and since 1936 had been retired, devoting his time to his own investments. He was a director of the Concord (Mass.) National Bank and a trustee of the Equity Investment Fund. Besides his widow, Mrs. Ethel Brown Prouty, Ed left three sons, all United States Navy officers: Lieutenant Gardner E. Prouty, Jr., Lieutenant Donald B. Prouty, and Ensign Roger W. Prouty. Ed was a very loyal Tech and '07 man. Very rarely had he ever missed a class dinner or reunion since 1907. We shall miss him. — Roy F. Gale died on July 26, at the Presbyterian Hospital, Philadelphia, after a sickness of two months. Roy had been an employee of the Midvale steel company since 1909, during recent years having been plant manager. He is survived by his widow and one son, 21 years old. The family home is 220 Valley Road, Merion Station, Pa. I wrote letters of sympathy on behalf of the Class to the families of both of these men. — Howard G. McVay, who was associated with our Class for only a short time in Course II, died in January. We have not known of his doings since 1907.

The Worcester, Mass., *Gazette* of August 14 contained a cut of Staff Sergeant George Pliny Allen, son of our Charlie Allen of Spencer, Mass., with a story to the effect that he had been missing in action in the Middle Eastern area since August 1. Whether anything further has ever been heard I do not know. Charlie and his wife

1907 Continued

had received from their son a medal given for having completed a certain number of flights over enemy territory. Shortly after Pearl Harbor, Pliny volunteered for service in the air forces and had seen almost continuous action in England. — Lawrie Allen once again became a grandfather on June 17, when a son, David Lawrence Allen, was born to Mr. and Mrs. Richard M. Allen of Needham, Mass. — In last May's issue of *The Review*, I noted change of address of Cecil F. Baker to 2816 Inverness Place, Cincinnati, Ohio. I have heard from him saying that he is senior architect of Cincinnati district office of the Corps of Engineers. — A new address for Albert L. Burwell is 944 Chautauqua Street, Norman, Okla., but I know no facts regarding his business.

A clipping from the *New York Times* of August 27 states that Frederic G. Coburn, who was affiliated with our Class in Course XIII-A, was elected president and a director of the Brown Company, a pulp and paper concern. For many years Coburn was an officer in the Construction Corps of the Navy, later serving with the Bethlehem Shipbuilding Corporation, and then becoming a partner with Sanderson and Porter, engineers. Herbert Spear ('07) is superintendent of the pulp division of this Brown Company at Berlin, N.H. — Early in July, I learned through the Alumni Office that S. Gilbert Emilio's address had become Rural Free Delivery 4, Laconia, N.H., which caused me to write him promptly, as I had supposed he was set for life as curator of the Peabody Museum in Salem, Mass. A long letter from him was the result. From this I learned that in July, 1941, he and his wife and two sons moved to a dairy farm in Exeter, N.H., owned by his older son, and in 1942 he severed connections with the Salem museum and bought the Sunny Slope Poultry Farm in Gilford, N.H. The son referred to is Luis V. Emilio, M.I.T. '36, so now we have two Technology men, father and son, throwing their weight into food production as a contribution to the war effort. — Stud Leavell is a colonel in the Army Air Corps, doing special work the details of which cannot be announced. His address is Apartment 403, 2500 Q Street, Northwest, Washington, D.C. — Alexander Macomber, who is also in Washington, writes that he sees Stud occasionally. Mac's Washington address is 2000 Connecticut Avenue, Northwest.

In the *Boston Herald* of June 9 was a cut of Anne Mather, daughter of Colonel John Mather, commanding officer of Watertown Arsenal, Mass., as a graduate from Wellesley College, and then on June 27 her picture appeared again as the bride of Major Francis G. Jenkins '34.

Howard McChesney wrote me last August, thoughtfully sending a clipping regarding Roy Gale's death, and said: "As usual, it takes some kind of a jolt to open any kind of correspondence. . . . I believe your records are up to date on the marriages in the family — Constance in October of 1937 and Mary in June of 1941. Helen has one more year of high school and thinks now that she will be a Smith girl. Only one grandchild so far; Constance gave us a grandson last April. Can't say just yet where he will matriculate. His father, Frederik Brauer, was M.I.T. '30 and Princeton '34, with a master's degree in '37. Both

of my sons-in-law are lieutenants, junior grade, in the Navy." Howard lives at 411 Bryn Mawr Avenue, Cynwyd, Pa. — One of the sons of your Secretary is in the Army Air Forces, another in the Infantry, and a son-in-law in the Navy. — Phil Walker, while vacationing last September at West Dennis, Mass., on Cape Cod, not far from the Oyster Harbors Club, our regular rendezvous for five-year reunions, learned that Bill Woodward, who has been "lost" to us for several years, is again living at his place at Bass River, South Yarmouth, Mass., and is back in the steel business. He has no office except his traveling bag and is away from home many weeks at a time, often taking Mrs. Woodward with him.

Milton MacGregor writes that he became a grandfather for the second time on August 25, but that he now has three grandchildren in view of the fact that identical twins, both girls, were born to Arthur E. and Beatrice MacGregor. During the past summer, Milton managed the Appalachian Mountain Club camp on Cold River in North Chatham, N.H., and found time to climb Mount Washington for the 29th successive year. Charles W. Crooker, husband of his daughter Elizabeth, was ordained a Congregational minister in September and is a pastor of the church in Lyme, N.H. — BRYANT NICHOLS, *Secretary*, 23 Leland Road, Whitinsville, Mass. HAROLD S. WONSON, *Assistant Secretary*, Commonwealth Shoe and Leather Company, Whitman, Mass.

1908

All who attended our 35th reunion last June say it was a great success and that a wonderful time was had by all, thus proving you never can tell what can be done until you try. To those of you who have been able to attend our past reunions, it is unnecessary for me to tell you of the enjoyment we all had, the pleasure of seeing and talking with our associates of Rogers steps after years of separation, the outdoor sports, and the comradeship of the whole reunion. We missed those unable to attend and hope they make the 40th in 1948.

The reunion was held, as was our 25th and 30th, at the Oyster Harbors Club at Osterville, Mass., on Cape Cod, where the Class now feels at home. Mine Host Wan-nop and his crew took just as good care of us as ever during our visit, which began Friday afternoon, June 18, and regrettably ended on Sunday afternoon, June 20. We were favored with perfect June weather during our stay. Because of gasoline and tire restrictions, most of us went to the Cape by train, and were met at West Barnstable by club cars. Several of us had lunch together before traintime, and from that time on it was, "Do you remember, and what's become of . . . , together with reports on the excellence of various grandchildren.

It was a pleasant surprise on reaching the club to see Jimmie Burch from Dubuque, Iowa, who had got in ahead of us by the train from New York, especially as Jimmie had written that on account of war conditions he was too busy to get away. Apparently after he had written, Mrs. Jimmie did a selling job, for which '08 is thankful, and Jimmie's record of attendance at reunions is still 100 per cent.

Eighteen of the Class had arrived by dinnertime, and the reunion was properly started. The evening passed only too quickly with the fellows talking over old times and learning from each other what had happened in the past 35 years. Joe Wattles had brought down some very interesting sound, colored moving pictures, but apparently something had gone wrong in the projector, as it refused to function properly. While waiting in the dark, our song birds got busy and rendered some very creditable entertainment for the patient audience, which included quite a few of the guests staying at the club. There were several Technology graduates of later vintage than '08 who certainly helped out on the old Tech songs.

Later in the evening our contract experts got started and in spite of the expert advice and comments from the side lines managed to have a good game, with a net gain of nine cents for the winners. We found that we still had a few ping-pong players in the Class, but the majority preferred to recline in comfortable chairs and tell the players how it should be done, or visit the grill and settle for all times the question of which is better, plain soda or ginger ale. As an indication of the passing of time, most of the fellows were in bed by midnight, somewhat different than at the 30th.

Saturday morning the weather was perfect, and after a leisurely breakfast there was a call for golfers. Times have certainly changed, as only George Belcher, George Freethy, and Toot Ellis had the courage to tackle the course. They had the moral support and advice of several onlookers for a part of the way around at least, and they really showed they were still pretty good.

Some of us walked over to Crosby's Bait Yard to see about a fishing trip, but found that due to wartime restrictions our piscatorial artists would have to be content to sit on shore and tell about the big ones which got away in the past.

During the afternoon several other fellows showed up, so that 23 were on hand for the banquet Saturday night. During the dinner, Harry Rapelye and Hob Ferris, ably seconded by George Glover and George Lees, entertained with well-remembered songs and jokes, which took us back to the "Old Union." Unexpected music was provided by a volunteer pianist named Pat, who had had a successful afternoon not only on the golf course but in the grill as well. He was certainly an enthusiastic performer, but was finally taken away by friends. He didn't stay away long, for we had hardly finished dinner and settled down for a spell of yarns and after-dinner tea than he reappeared all dressed up and bent on entertaining us with self-accompanied songs. He got better as time passed, and soon had the whole crowd joining in. While the quality of the music was not up to that provided by Dick Collins at our 30th, it was still pretty good, and any lack in quality was made up in volume. Perhaps that's why the crowd wasn't in bed by midnight. The contract players had withdrawn to a quieter place and after a prolonged battle the winners were in about 24 cents, some better than the night before — probably due to lack of side-line advice.

Sunday was another beautiful day, and when we got down to breakfast, just under

1908 Continued

the dead line, we found that Ed Kilburn had already left on his way home to Wilmington, N.C., and that our golfers, George Belcher and George Freethy, were at it again. The rest of the crowd spent the morning reading the Sunday papers, taking walks, and just sitting. A. S. Cohen showed up about noon, bringing the number attending to 24.

After dinner the fellows began to pack, but they were finally rounded up so we could get a group picture, and after that the crowd began to break up. While the return trip to Boston on the train was tiresome because of the crowds, it was worth while considering the good time we had had. The following were present at the reunion: George Belcher, Waban, Mass.; Bill Booth, Foxboro, Mass.; Jimmie Burch, Dubuque, Iowa; Nick Carter, Waban, Mass.; Lang Coffin, Newton, Mass.; A. S. Cohen, Boston, Mass.; Alton Cook, Chestnut Hill, Mass.; Ray Drake, Washington, D.C.; Toot Ellis, Melrose, Mass.; Paul Esten, Stoughton, Mass.; Hob Ferris (a lieutenant commander), Woods Hole, Mass.; George Freethy, Watertown, Mass.; George Glover, Lima, Ohio; Harold Gurney, Brookline, Mass.; Sam Hatch, Watertown, Mass.; Stiles Kedy, Melrose Highlands, Mass.; Karl Kennison, Waban, Mass.; Ed Kilburn, Wilmington, N.C.; George Lees, Pottstown, Pa.; Harry Lord, Lowell, Mass.; Steve Lyon, Providence, R.I.; Harry Rapelye, New York, N.Y.; Henry Sewell, Norwell, Mass.; and Joe Wattles, Canton, Mass. The long-distance members were Jimmie Burch, Ray Drake, George Glover, Ed Kilburn, and George Lees.

Here are some of the letters received from classmates unable to get to the reunion. Howard B. Luther, 2570 Grandin Road, Cincinnati, Ohio, wrote: "This year the annual meeting of the Society for the Promotion of Engineering Education occurred in Chicago the same date as the reunion. I certainly would have dodged that meeting to go to the reunion if it weren't for certain war conditions. In Chicago there was much discussion of the war courses which are presumably going to keep the colleges economically alive. I had decided that even the meager possibility of gathering some of the information I wanted made this meeting too much worth the gamble to miss."

"Memories of the reunion in '38 make me long for those days of peace. Perhaps I told you in Boston how I ran into Burt Cary at the Dorchester Hotel in London. One morning he found me in front of the hotel practicing on the five-gear shift on an English car we were renting. As my wife came out to see the car, Burt told her of my ridiculous difficulties. You certainly know how much I will miss him whenever I am around Boston. It was very pleasant for me to have lunch with you and Frank Towle in Boston last June, and I expect to see you again before 1948."

From Waldo Morrison, the Union League Club, New York, came the following: "At the time of the reunion, Harold Weeks was in Buffalo, and I couldn't get in touch with him. I was busily engaged in court proceedings and conferences. C. O. Brown was traveling in the South, and Loeb was in Washington. Joe Pope had a family anniversary that week end. The reunion should have been in New York, although

Oyster Harbors is a very good place. I hated to miss the 35th."

A. G. Emery, United States Rubber Company, Rockefeller Center, 1230 Sixth Avenue, New York, wrote: "I note that you have been in touch with Herb Elton. I saw him several years ago when he lived in Bridgeport, but we never seemed to get together. If you see him, give him my best and tell him where I am."

"I will look forward to seeing you in New York in the not too distant future. I know a place where they have a couple of nose bags hung up which we might don for a nice little party for ourselves. If I happen to be in Boston, I'll give you a ring and make an effort to see you there also."

Harold Osborne, 379 Highland Avenue, Upper Montclair, N.J., said: "Sorry I couldn't join the bunch at Osterville. I am working something over six days a week, and on the reunion week end had to leave Sunday to go to Cleveland to attend the annual meeting of the American Institute of Electrical Engineers.

"This past year I saw Ernest Kilburn in Raleigh, N.C., where he came over from Wilmington; Harry Patten in Toronto; and one or two other '08 men in other places. These are in addition to several classmates in New York whom I run across quite frequently."

Doc Leslie, 26 Thorndike Street, Beverly, Mass., said: "I was sorry that I could not make the reunion. Please give my kind regards to any of our friends you see." — Fred Cole, the Lincoln House, Lincoln, Maine, wrote: "Sorry I missed out on the reunion. I'm glad you had a good time."

From Joseph Pope, Stone and Webster Engineering Corporation, New York, came: "I would like very much to have been able to get down to see all the fellows, but the date was a particularly unfortunate one for me. Morrison called me up before your letter came and reminded me of the party. I had to give him the same answer as I gave you."

Bill Taylor, Corning Glass Works, Corning, N.Y., wrote: "I regretted not being able to join the fellows in the celebration, but know that everyone had a good time as usual." — From H. W. Griswold, Metropolitan District Water Bureau, Hartford, Conn., came: "Arrangements had been made for me to attend the American Water Works Association conference in Cleveland during the week ending the 19th, so I could not get back from that in time to take in the reunion."

Ted Joy wrote: "Much to my disappointment and disgust, I found it impossible to attend the reunion, but I was so tied up that I could not possibly get away. It was the first one I've missed in a long time, and I had been looking forward right along to seeing all the fellows again."

Kurt Vonnegut, Ridge Road, Williams Creek, Indianapolis, Ind., said: "Uncle Sam wouldn't let me come. Awaiting the return of demand for architects, I am now employed in the local Fall Creek Ordnance Plant in the capacity of 'supervisor of materials control' — a title that should pay at least \$10,000 a year but doesn't."

C. O. Brown, Southern Kraft division of the International Paper Company, Mobile, Ala., wrote: "Your reunion notice came to Mobile all right, but I had been in Washington for a month. It just happened

THE TECHNOLOGY REVIEW

that the week end on which the reunion was held was just the one I could have used to advantage on Cape Cod. I am certainly sorry I did not know you fellows were there where it was cool and comfortable, for it certainly was hot in Washington."

"Business is certainly some merry-go-round. Two-thirds of the time I am trying to find out what the bureaucrats in Washington want to do, and the other third I spend trying to figure out how to do it. The results are loss in production and the definite souring of many dispositions, including my own."

From Dick Collins, 279 Bellair Road, Ridgewood, N.J., came the following: "As you can well appreciate, I did not like to write that I could not get to the reunion. We are doing quite a bit of work for the government at the Botany Worsted Mills, and as my boss picked this time to go to Florida, I was out of luck. My oldest daughter, Ann, was married this winter to a young man who works for General Motors. He is in New Jersey helping to build planes. My son has been in the service since March, 1942, in Washington and Oregon. He is in the Infantry. He is apparently getting a nice break now, as he is taking the Army service training at Oregon State College at Corvallis, Ore., and it looks as though he will be there awhile. He is getting a lot of engineering in a short time and will be either in the Ordnance Department or in the Corps of Engineers. My other daughter was just graduated from high school and is headed for Elmira College, I hope. She worked in a defense plant this summer."

"As for me, I'm still working on the dizzy task of maintaining, or trying to maintain, production schedules, on labor problems, government forms, red tape, and so on. I sure missed the good time with the crowd."

W. B. Hunter, Wellesley Hills, Mass., wrote: "I regret that preparations for my son's wedding prevented my participation in the class reunion festivities this year." — At the reunion we received a telegram from Linc Mayo wishing us a good crowd and good weather, and expressing regret at not being present.

We are sorry to report the deaths of two faithful and active members of the Class — Paul Esten and Herbert T. Gerrish. From the Canton, Mass., *Journal* of August 20 comes the following obituary: "Paul A. Esten of Stoughton, prominent local manufacturer and veteran of World War I, died last Friday morning, August 13, after an illness of only two weeks. He was a founder of Stoughton Post, American Legion and was one of its past commanders, and also served as its chaplain for many years. He was born in Amesbury 58 years ago, son of Walter F. and Effie L. Smith Esten. He graduated from Dorchester High School and from the Massachusetts Institute of Technology in the class of 1908 where he specialized in chemistry. He was associated with Charles Stretton & Son, manufacturers of knit goods in Stoughton and for many years conducted a textile business on Walnut Street, Canton, manufacturing the Dr. Holt Baby Wear."

"Mr. Esten was a member of the Congregational Church, Rising Star Lodge A. F. & A. M., the Chicataubut Club and the Stoughton Fish and Game Association."

1908 Continued

He is survived by his widow, Mrs. Marion (Stretton) Esten, two sons, Robert Esten, who was associated with his father in business, and Private Nathaniel Esten, who was home on a furlough before his father died; also a granddaughter, and two sisters, Mrs. Mildred Cooper of Newton Highlands, and Mrs. Louise E. Comstock, wife of the late Dr. Frank L. Comstock of Berwick, N.S. Another son, Thomas Esten, who had served during the present war in France, and later in the Far East, died over a year ago in a hospital at Alexandria, Egypt. . . .

The following appeared in the Boston *Herald* of September 7: "Herbert T. Gerrish, 57, of 194 Warwick Road, Melrose, president of the Trimount Dredging Co. of Boston, died at his home yesterday. He was a graduate of Massachusetts Institute of Technology and was born in Portland, Me. After his graduation he entered the Eastern Dredging Co., owned by his father, the late John H. Gerrish. He succeeded his father as president of the firm, now the Trimount Co.

"He was past master of the Wyoming Lodge of Masons in Melrose, and a member of the Waverly Royal Arch Chapter, Hugh de Payens Commandery, Knights Templar of Melrose and Aleppo Temple. He was moderator of Melrose Highlands Congregational Church and a member of the American Society of Civil Engineers. He leaves his widow; a son, Whitney, and a daughter, Nancy, both of Melrose; two brothers Morris and J. Jordan, both of Melrose, and five sisters. . . ."

It is with regret that we have learned of the death of John C. Gaylord on June 2. The following notice appeared in the Los Angeles *Times* of June 3: "Stricken with a heart attack while en route to a dinner party with friends, John Clarence Gaylord, 58, Superintendent of hydro generator units for the Southern California Edison Co., died last night before medical aid could be summoned. Gaylord and his wife were riding in a car driven by his friend, Julian Adams, 1449 Bradbury Road, San Marino, when he suffered the fatal attack. . . ."

"A native of Clinton, Ct., Gaylord had been with the Edison Company for 30 years and was considered an outstanding authority on hydroelectric power systems. He was a graduate of Massachusetts Institute of Technology and Throop Institute (later to be known as California Institute of Technology) in Pasadena. He leaves his widow, Mrs. Huotqua Gaylord of 1189 Sherwood Road, San Marino, a brother, James M. Gaylord, chief electrical engineer for the Metropolitan Water District, and a sister, Mrs. James M. Johnson of San Diego."

The following note from Mat Porosky is of interest: "Some time ago I recall that you mentioned the need of getting news of class members, so I thought I would drop you a line to tell you that I have just been elected director, president, and general manager of the Eagle Signal Corporation, Moline, Ill. In peacetime, the Eagle Signal Corporation is a manufacturer of timers and counters for controlling machine-tool and process equipment, and also traffic signals and control equipment. Its products have been adapted to wartime needs and most of its efforts are now devoted to war production.

"The satisfaction of being actively engaged in the war effort and of my elevation to the office of president compensates only in part for my continued absence from home and family. I do hope that some day my trips to the East may permit timing so that I can attend a class meeting and dinner. I trust this finds you well, and please remember me to all of our classmates."

We have the following changes of address to report: Chesney H. Criswell, 2582 Clermont Street, Denver 7, Colo.; Leonard S. Gerould, 716 Hulem Way, Wilkensburg, Pa.; Harry A. Rapelye, 100 East 42d Street, New York, N.Y.; William H. Toppan, 104 16th Street, Wilmette, Ill.; Captain Harold E. Weeks, J. G. White Engineering Corporation, 80 Broad Street, New York, N.Y.

The first bimonthly dinner of the 1943-1944 season will be held at the University Club in Boston on November 16 at 6:30 p.m. The usual notices will be mailed early in November. Colored moving pictures of the 35th reunion will be shown, so plan now to come. — H. LESTON CARTER, *Secretary*, 60 Batterymarch, Boston 10, Mass.

1909

Your Secretaries, who took over Charlie's duties just a year ago, are now embarking on their second year. Thanks to the splendid co-operation of you class members throughout the year, we were able to maintain a substantial quantity of class news in each number of *The Review*. Again this coming year we are depending on you to supply us the necessary copy. Fred Fassett, the editor, advises us that on account of War Production Board restrictions, the paper tonnage allotted to *The Review* has become limited. The Editors do not plan, however, to "cut" class notes, but it will be necessary to be concise and to edit carefully.

During the summer, Paul conducted a most interesting '09 reunion at the University Club in New York. Sam Main, Charlie's son, is an Army private and is also an actor. He has been playing in *Junior Miss* and *The Army Play by Play* at Army camps. While the latter was playing in New York for two weeks, Rose, Charlie's widow, and Charles, Jr., a lieutenant, junior grade, in the Coast Guard, stationed at Charleston, S.C., with his wife Majorie, came to see it. Paul not only rounded up the four Mains for a luncheon at the Club, but also included Carl Gram, Jr., a Navy diver who is operating in the Hudson River mud. Paul wrote: "He is the image of Carl, though not quite so blond. Charlie, Jr., is the image of his dad, while Sam resembles his mother. Well, tongues wagged aplenty. I think we all had a good time, and I know I did."

In September, Paul spent some time in Maine storing up vitamins for the season ahead. En route he visited the Review Secretary in Cambridge. He planned to go to his old haunts, Friendship and Isle au Haut. We can look forward to his report in next month's *Review*.

Probably everyone has learned that Brad Dewey, X, has succeeded William Jeffers, President of the Union Pacific, as Mr. Jeffers goes back to his civilian duties. Brad has been assistant director of the rubber administration since its inception and he now takes over the directorship. No one

needs to be told how well the rubber administration has been managed or in what capable hands it will remain under Brad's management. With Brad as rubber czar and Jim Critchett's company, Union Carbide and Carbon Corporation (see the April, 1943, *Review*) making about one-half the synthetic rubber for the country, '09 men should have no trouble in getting new tires for their cars.

On August 18, the Dewey and Almy Chemical Company of Cambridge, Mass., received the Army-Navy Production "E" award. The award was made by General Corbin of the Quartermaster Corps, and Brad made the speech of acceptance. Brad's Washington office is still in the Municipal Building (over the jail) and he lives at 1 Scott Circle. Mrs. Dewey is with him.

The Class has been further honored in having another member drafted by Uncle Sam to push along the war production. About August 1, Charles E. Wilson, Executive Vice-chairman of the War Production Board, appointed Johnny Nickerson, II, as director of a newly created management consultant division. This division is charged with "finding ways to increase production through better industrial relations and management practices." Johnny was recently general superintendent of the Cheney Brothers plant in Connecticut.

Two of our professors are making similar announcements. Eleanor T. Jones, daughter of Bill Jones, II, Associate Professor of Heat Engineering at the Institute, was married on August 21 to Ensign James T. Ledbetter, Naval Air Corps, now stationed at San Diego, Calif. Jane G. Dawes, daughter of the Review Secretary, was married on June 26 to Lieutenant John H. McClellan, Signal Corps, now stationed at Patterson Field, Dayton, Ohio.

The following has been received from Bob Glancy, one of the topnotchers in Course VI, first baseman on the class baseball team, and member of the tug-of-war team: "I wrote an account of myself and family some years ago, but time has moved on and I have no idea what I said then. The family now includes three boys, about 6 foot, 4 inches in their socks, and two girls of my own height, but we have only one daughter at home. Two boys and one girl have married, and my namesake has a three-year-old girl. He left Technology in '37, after receiving a master's degree in communications. One boy is in the Signal Corps, the other in the Infantry."

"I have been with the Bell Telephone Company of Pennsylvania since I left the laboratory in 1910. This is my third and longest stay in Philadelphia, but I had two periods in Harrisburg and one in Pittsburgh. I have been called some kind of an engineer during all this time but have hardly used even Ohm's law in my work. I seldom see anyone of our old group, although I am apt to meet R. L. Jones on my visits to New York. It would be nice to get around to reunions, but it is so easy to stay comfortably at home that I always take the easy way."

— PAUL M. WISWALL, *Secretary*, 90 Hillside Avenue, Glen Ridge, N.J. CHESTER L. DAWES, *Review Secretary*, Pierce Hall, Harvard University, Cambridge 38, Mass. *Assistant Secretaries*: MAURICE R. SCHARFF, 235 Second Street, Southeast, Washington, D.C.; George E. Wallis, 1606 Hinman Avenue, Evanston, Ill.

1911

Out of the welter of thrilling war news in the past five months, we of '11 thrilled most to the June award of 24 Oak Leaf clusters to Lieutenant General George C. Kenney, I, in lieu of a second Distinguished Flying Cross "for exceptionally good work in the air war over the Southwest Pacific."

At this mid-September writing, as a year ago, '11 is again over the top in the Alumni Fund, with 100 per cent of our quota of contributors. And this year, Alumni Fund IV, our average per subscription is up about 25 per cent. You classmates make me a very proud Class Agent.

Still another summer event of '11 importance was the elevation of Monk deFlorez, II, to Captain Luis deFlorez, Bureau of Aeronautics, Navy Department, Washington, D.C. Did you read the article, "Special Devices," in *Life* for June 28? It has a speaking likeness of Monk, describing him as "an engineer and Navy pilot who understands fledgling training." The article states further that "The genius in the contraptions that emerge from his laboratory lies in the way his staff adapts seeming toys to authentic training use." Some of the newest inventions developed under Monk's direction are described as "such complex master-pieces of engineering that they are military secrets," their purpose being "to breed fighting experience into a man by synthetic training so that he reacts instinctively and properly when faced with actual combat." Parenthetically, my oldest son — O. B. Denison, Jr., lieutenant, junior grade, stationed at Quonset Point, R.I. — has had several contacts with Monk in his development work and is most enthusiastic about it. We have 21 classmates in the services, with the Army claiming 18 — one lieutenant general, one major general, one brigadier general, four colonels, five lieutenant colonels, four majors, and two captains; the Navy, two captains; and the Coast Guard, one lieutenant commander.

As chairman of the aviation committee of the New England Council, Burleigh Cheney, II, presided at the June 10 New England aviation conference in Boston. In his opening remarks he said that "New England and its people have always been and still are a very important part of this country and must take an active and important part in this post-war conversion to commercial and private air activity."

Carl Ell, XI, President of Northeastern University, in an address to an alumni group, called 1943 "the most amazing year in the history of Northeastern." The year marked the admission of coeds to the day colleges and the enrollment of 600 students in government war training courses. Last summer, Carl represented Northeastern at the fiftieth anniversary meeting of the Society for the Promotion of Engineering Education.

Julian Gravely, V, for many years chief engineer of the Winchester Repeating Arms Company, New Haven, and until recently the consulting engineer for the Western Cartridge Company at East Alton, Ill., has been elected president of the Beryllium Corporation of Pennsylvania. He has gone to Reading, Pa., to carry on actively also as general manager of the company.

Fat Merrill's niece, Phyllis E. Merrill, 21-year-old WAC corporal, made the head-

lines in the *Boston Herald* in early September. She was forced to beat a hasty retreat in the face of a German onrush while she was attending a finishing school in Paris. Later in Shanghai, where her father, Hamilton Merrill '12, worked as an engineer, the Japanese problem took a turn for the worse, driving her and her family across the Pacific through Canada to Boston, back to Milton. It was then that Phyllis decided to join the WAC.

While in Fall River early this summer on business, I picked up the evening paper and came across a picture of Major Ted Van Tassel, X, administrative officer of the Chemical Warfare Service, presenting an award of excellence to 20 Chemical Warfare Service girl inspectors at the Firestone Rubber and Latex Company, Fall River.

Ted Parker, I, became head of the Institute's Department of Civil and Sanitary Engineering on July 1, and at the same time Roy Seaton, II, left Washington, D.C., where he has been in government educational circles, to become again dean of the school of engineering, Kansas State College, Manhattan, Kansas. — Charlie Hobson, X, is busier than ever as superintendent of the Barium Reduction Corporation, South Charleston, W.Va., particularly in expanding their Thiokol program and in meeting the increased demand for tracer-bullet material. — C. R. Johnson, X, has been doing consulting work with the Ridbo Laboratories, Paterson, N.J., on materials for use with synthetic rubber, about which he can't say much except that "they show much promise toward making synthetic rubber perform better and more like natural rubber."

Frank Osborn, III, of the Andes Copper Mining Company, Potrerillos, Chile, says that his oldest boy was on the U.S.S. *Chicago* in the Solomons when she was attacked and sunk over a period of a couple of days. He was scratched up a bit and took a rest at the Army base hospital on New Caledonia. He is still on active duty in New Caledonia. — Harry Tisdale, V, writes that he had a fine renewal of acquaintance with Sam Hayes, V, when the latter came up to New York from Charlotte, N.C., where he is resident manager for the Ciba Company, to attend the national meeting of the A.A.T.C.C. Harry also sees Joe Harrington, VI, and his wife, at Larchmont quite frequently. Harry's wife, Grace, had a gall bladder operation early this summer, but has come along in great shape.

Since September, 1942, George Watson, IV, has been in Hughes Springs, Texas, building a steel mill to manufacture steel out of iron ore. "The project," he writes, "involves 10 miles of railroad, a dam that will cover approximately 2,500 acres, a blast furnace with a capacity of 1,250 tons a day, coke ovens with a capacity of 1,500 tons of coke a day, and all of the appurtenances thereto. Living accommodations are scarce, although we have been very comfortable living on a farm eight miles away. We hope to have the plant in real production before the cold weather."

Thanks for the many letters through the summer; keep 'em coming. — Some new addresses include those of Lieutenant Colonel C. Phillips Kerr, Army and Navy Staff College, New War Building, 21st Street and Virginia Avenue, Northwest, Washington, D.C.; Beardsley Lawrence, 136 West Fourth

Street, New York 12, N.Y.; Lee R. McLellan, 1616 Valmont Street, New Orleans 15, La.; Oliver D. Powell, 353 West California Avenue, Glendale 3, Calif.; Arthur H. Rooney, 161 Warren Avenue, Youngstown, Ohio; and Louis L. Wetmore, 6 Wait Street, Glens Falls, N.Y. — ORVILLE B. DENISON, *Secretary*, 82 Elm Street, Worcester 2, Mass. JOHN A. HERLIHY, *Assistant Secretary*, 588 Riverside Avenue, Medford 55, Mass.

1912

With the greatest regret we note the passing of Dave McGrath, our ever smiling Assistant Secretary, who died on September 12 after an illness of about a year. It would have been just a year the first of October since his operation. He resumed part-time work at the McGraw-Hill Publishing Company about two months after he left the hospital, but his weakened condition forced him to give this up gradually, and he was confined to his bed permanently until the day of his death. Though he suffered terrific pain day and night and never knew a moment's comfort, he was extremely patient and always had a cheerful smile for his wife; his son, David, Jr., 16 years old; and his daughter, who is nearly 18. Dave will be missed by us all, as his friendly smile made him welcome wherever he went.

We regret the passing of Merrill J. Kimball at his home, 281 North Highland Street, Lansdowne, Pa. Unfortunately, no details regarding his death are available.

Congratulations to Jonathan Noyes, who has been nominated and will undoubtedly be elected a vice-president of the American Society of Mechanical Engineers for the succeeding two years. John admits that he was probably ill advised in accepting this honor, as it only adds to his other cares. In addition to his duties with the Sullivan Machinery Company, he is president of the Technology Club of Northern Texas, which has a luncheon meeting the last Saturday of each month. John writes that two of his sons are now in the service, and a third will probably be in by the time these notes appear. One is with the Air Corps in the Hawaiian Islands, and the other was still in training in Texas when he wrote. Of all his six children, only the two youngest girls are now at home. John has asked that anyone passing through Dallas drop in, as the latchstring is always out.

We are happy to announce the marriage of Jim Cook's daughter, Mary Elizabeth, on June 1 to Robert T. Harris, chief boatswain's mate, United States Navy. Mr. and Mrs. Harris will reside at Freeport, Maine, as he is at present stationed at Portland. — FREDERICK J. SHEPARD, JR., *Secretary*, 125 Walnut Street, Watertown 72, Mass.

1914

The big event during the past summer was a class dinner at the Technology Club of New York, arranged by Charlie Fiske. This dinner, in addition to providing an opportunity for those around New York to renew acquaintances, was for the specific purpose of discussing the Alumni Fund and our forthcoming 30th reunion. Although June 28 was right in a record-breaking hot spell, 23 attended the dinner: Henry Aldrich, Phil Covitt, Alden Crankshaw, Ross Dickson, Buck Dorrance, Tom Duffield,

1914 Continued

Linwood Faunce, Charles Fiske, Oliver Hall, Bob McMenimen, Gus Miller, Art Mudge, Chet Ober, Paul Owen, Roy Parsell, Art Peaslee, Ben Rauber, Carleton Sawyer, Seymour Spitz, Peb Stone, George Whitwell, George Zimmele, and your Secretary.

A great deal of enthusiasm was expressed in favor of having a reunion next June. The questions of transportation, inability to take time off, and the other wartime hazards were very fully discussed. It was felt, however, that a simple reunion at a location near the New Haven railroad line, between New York and Boston, should be planned. It was tentatively agreed that a spot near New Haven would be ideally situated, since persons attending from greater New York and most of New England could reach it without the difficulties involved in attempting to arrange for advance Pullman reservations. Roy Parsell had some very helpful suggestions, as he is familiar with the places available near New Haven. It is anticipated that a committee will be set up by Buck Dorrance in the very near future to carry out the details for this reunion.

Our Class has averaged moderately well in its contribution to the Alumni Fund, though it has not done so well as some other classes. Last year, 1913 established a precedent by having the 30-year class meet its quota 100 per cent, both as to persons and amount. Inasmuch as the class quotas are quite moderate, and as contributions to the Institute are deductible from Federal income taxes, those attending the dinner did not feel that our quota of \$3,260 was too high to be met fully. An attempt is being made to have as many as possible contribute \$30, that is, \$1.00 for each year out. To meet our quota would require 109 people, or approximately one-third of the Class. Because circumstances will make it difficult for quite a number of people to contribute the entire \$30, it is hoped that the number of contributors will exceed 109. In fact, our quota is actually 142. Some members of the Class will feel that they can exceed the \$30, so as to make up for those who cannot come up to the full amount. Several have already generously exceeded this figure. Ross Dickson is doing a splendid job in trying to raise the quota for the Class. We are already 73 per cent toward our goal. Let's all make Ross's work easy and at the same time keep the Institute financially solvent in its position as the outstanding technical institution of the country.

Notes were received from Harold Danforth, Frank Somerby, and Bill Simpson, expressing their regrets at not being able to attend the dinner. Danforth is still with the New York Public Service Commission. He reports that his son is a second-class petty officer in the Navy, that his oldest daughter was recently married to an Army man, but that his two other daughters are still at home. — Frank Somerby continues his educational activities, and is president of the Association of Private School Teachers of New York and Vicinity, in addition to serving on or being chairman of several educational committees. — Bill Simpson wrote that he had moved out into the country — Mastic, Long Island — and just did not have gasoline to get into the city. He is still in the chemical business with Chas. Pfizer and Company, one of whose

new products is the recently heralded miracle drug, penicillin.

Chemical and Engineering News of July 10 ran a story regarding Ray Dinsmore's promotion to a vice-presidency of the Goodyear Tire and Rubber Company, in charge of research and development. Ray has just directed the completion of a new \$1,325,000 research laboratory for Goodyear. The news item mentioned Ray's work in synthetic rubber both prior to World War II and afterward as assistant deputy director of the government's synthetic rubber program.

Two of our financial geniuses, Charlie Fiske and Les Snow, were seen lunching together in New York not long ago. Charlie's position as vice-president of General Motors Acceptance Corporation is well known to classmates, but perhaps Les's activities are not so well known because he has been more active as a Dartmouth alumnus. Les is a vice-president of the Chase National Bank of New York. His work is in connection with loans to utility companies, either on the part of his bank or in group financing. He has three daughters, the oldest of whom was married last winter to a West Pointer who had been graduated the day before the wedding. Les takes an active part in the Dartmouth Alumni Council.

Your Secretary had a call from Al Hanson of Washington, D.C., in June when he was in Boston to see his oldest daughter be graduated from Wellesley. Al's second daughter is now a sophomore at Connecticut College for Women. — Also from Washington comes word that Frank Ahern has been re-elected president of the Washington Safety Society. Frank sent your Secretary a copy of his new handbook, *Prevention and Control of Fire Losses*. This is a very handy tabulation of data for those interested in fire prevention. Frank, it will be recalled, is chief of the safety division of the National Park Service, a division of the Department of Interior.

These columns have previously reported that Lucian Burnham, a colonel in the Marine Corps, was in Londonderry, North Ireland. Now comes news via the press that the citizens of that city presented him with a shillelagh and a scroll in testimony of their appreciation of his service there. Part of the citation on the scroll read: ". . . as an expression of our warm appreciation of the courteous and friendly manner in which, during your stay amongst us, you have carried out your duties." Burnham is reported back in the United States.

Ralph Salisbury has been promoted from major to lieutenant colonel, and was last reported stationed at Fort Hayes, Ohio. — Alden Waitt, brigadier general, Chemical Warfare Service, is now serving abroad. — Henry Merrill's daughter, Phyllis, is now a corporal in the WAC. Henry, it will be recalled, has since graduation spent most of his time in China for the Standard-Vacuum Oil Company. His daughter was studying in Paris when the Germans started in that direction. She went to England and from there to Shanghai. When the Japanese situation took a turn for the worse, the family returned to the United States. Because of the accelerated credit for foreign service, it is understood that Henry will retire by the end of this year and that he has his eye on a farm in eastern Massachusetts. This re-

tiring business is something we shall be hearing more and more about. Believe it or not, that reunion next June will be our thirtieth!

Another daughter to receive publicity on joining the WAC was Sandra Lucas, daughter of Bill Lucas, retired lieutenant colonel of the regular Army. The papers brought out the fact that Sandra was officially continuing Army life, in which she had grown up. Bill, who won the Croix de Guerre and the Purple Heart in the last War, is now an inspector for Donald Douglas at Santa Monica. Douglas, incidentally, is the subject of a recently published book, entitled, *Sky Master*.

No accurate list is available of the sons and daughters of classmates in the armed services, but their number is known to be large. Your Secretary would appreciate hearing from classmates regarding the service of their children. — H. B. RICHMOND, *Secretary, General Radio Company, 30 State Street, Cambridge 39, Mass.* CHARLES P. FISKE, *Assistant Secretary, 1775 Broadway, New York 19, N.Y.*

1915

Hello everybody! Here is the '15 Alumni Fund score as of September 20: 128 (73 per cent) have given \$2,246 (76 per cent). If the 19 who gave last year and have not given so far this year would send in their checks after reading this, we'd easily hit that quota 100 per cent.

During the past summer I've had many pleasant contacts with classmates. In Buffalo, Ben and Margaret Neal, Gabe and Tess Hilton, Bill McEwen, and I had a little reunion all our own. Bill is on a government job there, living at the Saturn Club, 977 Delaware Avenue, Buffalo. I had a typical evening with those typical '15 men, starting early at Gabe's house and ending early at the same place — but early the next morning. Then in Detroit, I had lunch with Loring Hall, busy as a vice-president and director of the United-Carr Fastener Corporation. I talked to Dick Bailey, who lives at the Detroit Statler but travels all over the country for the American Chemical Paint Company. Incidentally, Dick is one of the few of us who are still bachelors. He writes: "Since last seeing you a couple of years ago in Philadelphia, I have been away from that friendly city, having divided my time between Pittsburgh, Cleveland, and this quiet little city. Right now I am gathering my laundry together for a trip into Canada, which will take me as far east as Sydney, Nova Scotia. Eventually I shall return to Detroit, so keep the address the same. The reason for all this banging around is that the companies I visit either make or use steel in large quantities, and it's nice to be able to help them process it."

Archie Morrison has been ill at a Cambridge hospital for some time but is slowly and successfully recovering. It was sudden, and it's hard to think of an active, energetic, healthy chap like Archie being laid up for so long. I'll keep you informed of his progress. All the best to Arch from us all. — When I met Marshall Dalton in Providence he was sporting a healthy tan, the result of a summer of golf mixed in with his busy insurance duties.

Ken and Esther Johnson in Norwich, Conn., have me on their hands occasion-

1915 Continued

ally and do a royal job of entertaining. Frank Foster is back in Boston, living at Pelham Hall, Brookline, and has a new job as purchasing agent for a Boston engineering firm. Frank Scully, Treasurer of the Cambridge Committee for Plan E, was elected a military substitute in the Cambridge Council. Frank missed in the original election by only a few votes, so this gives him the chance he deserves for his loyal and active civic interest. He was recently elected a trustee of the Cambridge City Hospital. Al Sampson looks hale and hearty but says he is slowing down. In contrast, Max Woythaler was a civilian soldier at Camp Edwards, Mass., on the 24-hour duty the Associated Industries did there one day last summer. I wonder how Max looked doing K.P.? — Of all things! St. Elmo Piza is in England, near London, with the Board of Economic Warfare, intelligence division. He flew over in June. We can hardly wait for the next reunion to hear his new English stories, heightened by the flavoring of the local color he is absorbing over there.

Henry Leeb found time enough away from his work as vice-president of the New York Trust Company to accept the chairmanship of the National War Fund campaign drive in the Orange and Maplewood areas of New Jersey. Louie and Leila Zeppler have moved to a new house at 316 Prospect Avenue, Cranford, N.J., and invite any wanderers to come in. Louie's son Harry is a private in the Marines. Little Andy is living at 179 Benefit Street, Providence, R.I., and is still showing them how at the Walsh-Kaiser shipyards there. Boots Malone reports his new business in Stamford, Conn., is coming along fine and would like to see anyone going by there. — You Izaak Waltons in the Class better watch out for your laurels. In 27 consecutive days of tarpon fishing at Bocagrande, Fla., this spring, George Urquhart established what may be a world's record for total fish caught, total weight, and per cent caught of total fish jumped. George is proud of the signed and attested record he has of his catch, and gives a most entertaining and colorful story of his experience. His son, who was graduated from Technology in '42, is a first lieutenant in the Air Forces at Santa Ana, Calif.

Howard M. Sawyer, of H. M. Sawyer and Son Company, Cambridge, writes: "Our company has received some splendid co-operation again this year from the technical laboratory at M.I.T., and accordingly I am pleased to enclose our check for the Alumni Fund." Thanks, Sawyer. This proves again that the Alumni Fund is worth while. — In Philadelphia I visited Herb Anderson's plant, the Fidelity Machine Company, which is 100 per cent busy on precision war work. The plant is a model of good housekeeping and typifies Herb's immaculate habits and polished manners. One of our most loyal classmates, Herb has already taken it on himself to arouse interest for our 1945 reunion and has written to some of the men we've not seen for many years. Nice work, Herb!

Deoch Fulton, editor at the New York Public Library, writes: "I just got around recently to reading the '15 notes in the July Review. Naturally, I was proud and pleased to see my name, but the note may cause some misapprehension. It's true

enough that I do edit *Scott's Monthly Journal*, but that is a work of the left hand and by no means my chief job. The latter is editor of publications of the New York Public Library. We issue several magazines, chiefly of bibliographical or historical interest, quite a few pamphlets, and an occasional book. We have our own printing plant here, with five linotype machines, and my job is to keep them busy."

Count on good Gene Place for support and help in any class activity! In his letter he makes a constructive suggestion that I shall follow with the hope that it produces the results Gene and I would like to see: "We in New York have been hoping that you would favor us with a visit and have felt sorry that you have not been able to do so. One of the ways of obtaining Alumni Fund contributions is to have informal get-togethers, which I am sure do a great deal to revitalize past friendships. Often, in times like these, we become so engrossed in doing our daily jobs that we neglect to keep alive the contacts of former years, which have meant so much to us. I have two suggestions to offer to you: first, that you plan to have in New York a '15 get-together sometime in the early fall; and, second, that you pick out certain cities and ask some of those who have contributed in those cities to get together and form a smaller local '15 alumni group. Not only would these small local groups increase the attendance at reunions, the interest in class doings, and so on, but, if the men were furnished with a list of those who had not contributed, each could take a few names and, because of friendship and acquaintanceship while at M.I.T., correspond with the delinquent members. As you well know, all of us appreciate seeing our old friends, and an opportunity to do so is generally more than welcome. It seems to me that both of these suggestions would work. As a matter of fact, when I was in Philadelphia, the Alumni Association meetings there were enlivened by a table full of '15 men. Even if you think my ideas are just a 'brain storm,' be sure to stop in when you are down this way. I would enjoy seeing you again, for in a couple of months it will be 32 years since you, Bill Spencer, Johnny O'Brien, and myself were trying out with several others for the class relay team. Ruth and I both send our best regards to you and to any classmates you might see in your travels."

It's sad to record the passing of our classmate, W. Arnold Houser, who died suddenly on May 4 in Detroit. He was graduated from the University of Michigan before entering Technology. Becoming associated with the Cadillac Motor Car Company in 1915, he rose to be general parts and service manager for Cadillac and recently had been director of the Cadillac Army Tank Training School. To his widow, son, and daughter goes the deep and sincere sympathy of the Class for their sad loss.

Do you remember that fat, lazy, bald Henry Sheils at Oyster Harbors and at our other reunions? Well, you should have seen the modern, streamline edition of Henry, 35 pounds lighter, walking proudly down the aisle of Saint Patrick's Church in Watertown, Mass., on June 10 to give his daughter, Marjorie, in marriage to Lieutenant, junior grade, Edward J. Maher.

THE TECHNOLOGY REVIEW

The best wishes of our Class go to this happy couple. Majorie has furnished the musical entertainment at several Boston class parties, and we all wish her success and a return engagement with us when we resume our parties. — Comes now to a close our first column with the words "Remember it is better to give," and so on. Send in that Fund check, you last few stragglers, and "help Azel." — AZEL W. MACK, Secretary, 40 St. Paul Street, Brookline 46, Mass.

1916

William I. Bowditch is now in the engineering department of the Boeing Aircraft Company in Seattle, Wash. Back in the good old days of Copley Square in 1915, Bill lived in Milton, Mass. — Charles L. Foote, who joined the Office of Price Administration in 1942 as a machine price specialist in Washington, D.C., was appointed regional price executive in New England early in September.

Arthur Stewart broke into print on July 16 when the New York *News Record* carried his picture in an article complimenting the Merrick mills of the American Thread Company at Holyoke, Mass., on winning the Army-Navy "E." He is assistant to the manufacturing vice-president of the thread company. — E. M. Wanamaker is president and general manager of the Electro Manganese Corporation, which recently completed and put into successful operation a large electro-winning plant at Knoxville, Tenn.

It is your Secretary's sad duty to report that Leroy Richard Byrne, XIV, passed away suddenly on April 12, in his office in Lynn, Mass.

C. J. McCarthy; formerly general manager of the Vought-Sikorsky Aircraft plant at Stamford, Conn., has recently moved to Hartford. He has been made vice-president of the United Aircraft Corporation. Mac has just purchased a house on Walbridge Road, West Hartford, in the same block with your Class Secretary. This assures any classmate passing through Hartford of a double welcome. — Your Secretary takes this opportunity to make a plea for letters from classmates to keep this news column going. — JAMES A. BURBANK, Secretary, The Travelers Insurance Company, Hartford, Conn. STEVEN R. BERKE, Associate Secretary, Coleman Brothers Corporation, 245 State Street, Boston 9, Mass.

1917

The famous Dudley Bell cigar may now be purchased from headquarters in Bristol, Pa. The proprietor, Dudley Edwards Bell, reported to L. L. McGrady that the cigar was being produced for him at a factory in Pennsylvania. Apparently the business is an avocation, for assurance is given that Mr. Bell's latest play will open in Boston soon. Mr. McGrady rendered his report following a vacation on Nantucket, the longest and best in some years. He is still pushing forward the plastics branch of Eastman, and anticipates continued and increased expansion for his branch. — Another vacationer, one Phil Cristal, rushed through Cambridge late in August, and impressed everyone with his busyness. Except for some increase in weight, he was his good old unchanged self.

The Chinese section reports that Te Pang Hou is to be given honorary membership

1917 Continued

in the Society of Chemical Industry at a dinner meeting at the Waldorf-Astoria Hotel in New York on October 22. The event "will be under the patronage of King George VI, will be a continuation of the proceedings of the annual meeting of the society held in London, July 9th." They also report that the son of P. Y. Loo '16 is now at Worcester Tech, with M.I.T. aspirations.

Both Commander O'Brien and Lieutenant Colonel Frank Conaty are alive and Japanese prisoners. The Boston Post commented as follows: "Word that Commander Thomas F. O'Brien U.S.N. of Jamaica Plain is a prisoner of the Japanese and in good health was relieving news to his friends in the country and to many a Navy man who directly or indirectly owes his life to the submarine construction and testing work done by this Boston officer. Experiments with a diving bell performed by Commander O'Brien and another navy man off Key West, Florida, resulted in the development of the operations that brought the 33 survivors of the U.S.S. *Squalus* to the surface and to safety. Commander O'Brien is a man who has served his country well in peace and in war."

The first word from Frank Conaty in 15 months was received on a prisoner's post card by Mrs. Conaty early in August. He indicated that he had received letters sent him and was well. Their son, Francis, Jr., honor graduate of the Citadel, has been commissioned in the cavalry, and subsequently decorated with the purple heart. He is now back on active duty. Frank's address is as follows: Lieutenant Colonel Francis S. Conaty, United States Army, Interned in the Philippine Islands, Military Camp No. 1, care of Japanese Red Cross, Tokyo, Japan, via New York, New York, U.S.A.

Another good old Boston name has also appeared frequently in the press: William A. Sullivan, who has recently been created a commodore, is one of the few Navy men to receive this rank, which has been re-established as a wartime grade. The raising of the *Normandie*, initiated under his direction, is still his responsibility, but as chief of Navy salvage, Bill himself is in Africa. Mrs. Sullivan in New York has received reasonably frequent and most interesting word of his activities as he hops over the various fighting fronts. He was in Africa with the first troops and in Sicily almost immediately after the invasion.

Dexter A. Tutein, President of the Tutein Corporation, has been named chief of the basic materials section, iron and steel branch, Office of Price Administration. Irving B. Crosby is a consulting geologist with the Navy, associated with the Bureau of Yards and Docks, war planning division. Lieutenant Colonel J. L. Wetzlauer is now executive regional director of Selective Service for New England, with headquarters at 10 Post Office Square, Boston. — Charles S. Venable has been appointed director of chemical research by the American Viscose Corporation, which is consolidating all its basic research activity at Marcus Hook, Pa.

Enos Curtin is on special service in Africa, acting as liaison between civilian and Army activities. The report indicates that his fluent command of French and Spanish and knowledge of the peoples are being

used to good advantage. — Professor Alfred J. Ferretti was honored with membership in Tau Beta Pi at the Northeastern University initiation on September 18. — Charles E. Judge, formerly of the American Reenforced Paper Company, is now a commander in the Navy and stationed in the Pacific.

Among the "business leaders to govern conquered lands," we find several famous New England personages, and well up in the list is Major James W. Doon of Henniker, N.H., Secretary of the New Hampshire Public Service Commission. No direct word has been received about Judge Doon's immediate plans.

Attendance at the New England meeting of the Society for the Promotion of Engineering Education at M.I.T. on September 20 included R. E. McDonald, E. A. Gramstorff, F. A. Stearns, C. E. Lansil, and J. A. Beattie.

Dean H. E. Lobdell, President of the Haddock Abatement League and other notorious down-East corporations, went on his annual summer spree to the Far West, and on his return was good enough to send the following note: "Last August, I spent a happy week end at the country estate of Neal Tourtellotte, between Lake Washington and the Cascade Mountains. His establishment, which is bounded on one side by a rippling brook and on the other by a rose garden (which includes certain of Neal's horticultural prize-winning concoctions), is also a farm in a practical sense. In the offing, for example, is a modern piggery inhabited by old pigs, little 'pigs,' and middle-aged pigs, including at the time I was there, a prize-winning boar doomed for early shipment to Alaska, where he is expected to sire sufficient pigs to support the future population of that territory, which it is anticipated will be commensurate with Alaska's vast area. It may be added that this little boar, destined to spend his declining days on or within the Arctic Circle, has already played a part in Neal's being elected to certain of the national swine breeders associations.

In Seattle, I also saw George Stebbins, who is cranking out ship after ship for the Associated Shipbuilders, of which H. W. McCurdy '22 is president and general manager. Up to the war, George had spent most, if not all, of his life in New England, but now he is transformed into a fountain of verbal enthusiasm for the great Northwest, and at the slightest provocation he will apologize volubly when the dusty haze prevents a good view of Mount Rainier from Seattle. — RAYMOND STEVENS, Secretary, 30 Memorial Drive, Cambridge 42, Mass. PHILIP E. HULBURD, Assistant Secretary, Phillips Exeter Academy, Exeter, N.H.

1918

Let our illustrious President, F. Alexander Magoun, give you the first story of our 25th reunion, which was held last June at Weekapaug, R.I.

Our reunion has come and gone. Some classes decided to hold no reunion because of the pandemonium of war, but we, having been cheated out of graduation by a previous international unpleasantness and out of our 15th reunion by conditions in 1933 hardly comparable to the Golden Age of Pericles, decided to hold a reunion anyhow. It was a good decision.

What did we have to show after a quarter of a century? Bill Wills has a gold medal for the best design of a small house; Mike Flett has the American Chemical Society's gold medal for his work on synthetic detergents; Theodore Wright is in charge of the aircraft development program for the whole country. We have some important vice-presidents like Phil Dinkins of the American Cyanamid and Chemical Corporation and Walt Robertson of the Massey Concrete Products Corporation. We have at least two honest-to-goodness lieutenant colonels: Wendell Kayser and Don MacArdle, who are not ringers in the form of West Point men who did just graduate work at M.I.T. Jack Hanley is with Firemen's Mutual and George Ekwall is an Episcopal clergyman, thus offering classmates insurance against the risk of fire both here and hereafter. Four are fathers-in-law: Pete Sanger, Yale Eveleth, Lew McClellan, and Don Montgomery. The race is on to see who will first have the shock of his middle age by being called "grandpa." Montgomery has three sons in the service, which is probably a maximum for any one of us. Doubtless many of us, like myself, have two sons in the service. The Howard twins have sons who have already been graduated from M.I.T., which is another sort of record.

Harry LeVine was at the reunion. His boy is just entering the freshman class. Eli Berman is working at M.I.T. in the Radiation Laboratory and also has two sons enrolled as students. Nat Krass has a blonde, blue-eyed, 16-month-old baby girl — which leaves us in an admiring peach-blossom mood.

As for the reunion itself, even the moon was full and delightful to gaze upon. Bob VanKirk came the farthest — from Evanston, Ill. He had a birthday on Saturday and a cake, as well as his extra lobster and ration of clams. Gretchen was the first to arrive, still holding the degree of U.B. (unclaimed blessing) awarded by Don Goss five years ago. Friday evening after dinner Mrs. Flett played the piano for community singing until someone said Mike had arrived. Ralph Mahony initiated a custom indicative of our proximity to being the 50-year class. If a lady approached we made a thumbs-up signal to signify that we knew the courteous thing was to rise and at least had it in mind.

After the class dinner on Saturday night, Ray Miller, ably assisted by Ev Rowe, showed us his own movies of the 1938 reunion and Ed Rogal's movies of the 1928 affair. Some of us would like to draw a friendly curtain over the change in our appearances. Then came a do-you-remember-when and that-reminds-me session. To the former classification belonged the story of Charlie Cross and his physics lecture on static electricity. As he rubbed the glass rod with the cat's skin some untamed imp of us let out a "meow" from the back row of that bleak amphitheater in old Walker. But Charlie had the best of it, for when it came time to generate friction with the silk handkerchief, he said, "Fortunately the worm is not endowed with a characteristic cry." Blachstein, bless his dear old heart, was the man we remembered best and loved the most, with Eddie Miller, Pa Lambirth, Tubby Rogers (we were his first class), and others coming in for their share. Do you

1918 *Continued*

remember the pool the Course II boys ran on how many men Eddie would kill during the hour in his boiler-explosion stories?

Ev Rowe came up with the best "that reminds me." It seems that during the war he and another rookie were ordered to report to some island to which the only means of transportation was a tugboat without a crew. "What were you doing before induction?" asked the captain. "Student at M.I.T." sez Ev. "What kind of a boiler is that?" asked the captain. "Dry back Scotch," sez Ev, squinting down the hatch. "And what were you doing?" asked the captain turning to the other lad. "Student at Harvard, sir." "O.K.," sez the Captain turning to Ev, "You're the chief engineer. He's the fireman. Now go below and let's get this craft under way." So ends our President's story.

Those present at the reunion were Mr. and Mrs. Walt Robertson, Mr. and Mrs. Ned Longley, Mr. and Mrs. Bob VanKirk, Mr. and Mrs. F. Alexander Magoun, Mr. and Mrs. Ralph Mahony, Mr. and Mrs. Bill Wills, Mr. and Mrs. Donald Montgomery and son Bruce, Harry LeVine and his son, Mr. and Mrs. Nat Krass, Mr. and Mrs. Pete Sanger, Mr. and Mrs. Tom Brosnahan, Mr. and Mrs. Yale Eveleth, Év Rowe, Sax Fletcher, Philo Shelton, Jack Hanley, Anna Eales, and the Secretary. Stew Wallace came in Friday evening for a few hours, and Max Seltzer appeared about luncheon Saturday and had to return to Boston that evening.

There were many others that we had hoped might get there. Among these was Pete Harrall, our Treasurer. We heard about that time of his marriage to Mrs. Frances Boone Young. A little later a letter from Jack Hanley will tell us more of Pete and his recent wanderings. A telegram came from Jule Avery from Cleveland while we were at the reunion. He suggested that when the war is over we hold another 25th and really have something to celebrate. The group liked the suggestion and suggested that it be held in the Middle West, so we from the East could do some of the traveling for a change. What do some of the rest of you think of this idea?

The following letter from Jack Hanley arrived recently: "The lost sheep has radioed his whereabouts and given some idea of his itinerary, so I make haste to tell you about it. I mean that our Class Treasurer, Pete Harrall, about whom loud and raucous comments were publicly made at our 25th reunion concerning the probability of his having absconded with the class funds, has written me an adequate letter of explanation. Pete is now engineer in charge, test and inspection, Friez instrument division of the Bendix Aviation Corporation, Towson, Md., with about 190 people on his staff of inspectors, calibrators, testers, and so on. Inasmuch as Friez is engaged in war production, I shall give you no more details on that, except to say that at reunion time Pete was in the process of transferring his business activities from Western Union in New York to Towson.

"Pete was married in April, and now has a 17-year-old daughter as well as a son, who is, I believe, about nine or ten. When Pete wrote, he was busy selling their home in Tenafly and was expecting to find a place in Towson and be moved by October 1. He tells me Jim Bugbee has been living in Tow-

son about 15 years. Pete has already contacted him, and they expect to have some good times together. I think I may express the feelings of all our classmates when I say we are looking forward to seeing Pete and his whole family at the next reunion. A postscript to this might be to the effect that we 'demand' a personal report from the Treasurer at that time.

"I was within 10 miles of Sterling Inn last week, so popped over for a pleasant visit with Ralph Mahony. Unfortunately, Rose was in bed with a bad cold, so I did not see her, but I talked with her briefly on the house phone. Ralph prepared one of his favorite dishes for dinner and invited me to join him. You guessed it — corn beef, cabbage, and all the vegetables, and 'corned while cooking' by Ralph himself. I recall that it involved one-half cup sugar and one cup of salt, but classmates' wives had better check on this with Ralph himself. Sterling Inn, about which many of you heard at the reunion, was the first inn in the United States to convert to war production. It did not stay in production very long. The crew that Ralph organized in the town of Sterling did such an efficient assembly job that the prime contractor could not keep him supplied with raw materials, and Ralph was faced with the problem of halving his personnel. Rather than make enemies of half his neighbors, he decided to stop the entire project. He is working on some other ideas, including a contact I was able to give him, so maybe by now the Sterling Inn is again in war production.

"In view of the facetious yet caustic reunion remarks of our Class President concerning the hospitality of Weekapaug Inn's Room 6, and anticipating possible further comments, I want to make clear that personally I am half Scotch and the rest is not soda. I am meanwhile looking forward to Alumni Day in Boston in March. Several of us want to return Tom Kelly's Alumni Day hospitality of last year, for his absence from the June reunion prevented our so doing then."

Following are a couple of letters from servicemen. From Fort Moultrie, S.C., from Major Granville B. Smith came: "Just a few lines to tell you and the gang that leave is granted only on emergency and the Army didn't think our reunion at Weekapaug sufficient reason, even though it was our 25th. After much traveling about the country, learning to be an expert in antiaircraft, I am now executive officer of a Coast Artillery unit defending the harbor of Charleston, S.C.

"My main duties are to control the harbor entrance in liaison with the Navy. Together we collect, evaluate, and disseminate all intelligence information and are prepared to act on it with all the forces at our command. I have been out on air patrol several times and expect to go out on one of the destroyers soon. We are getting expert in all the codes, ciphers, and so on, and are ready to sink the first ship that doesn't give the correct recognition signal. We've had a few submarine scares but the only thing we have hit recently is a whale. Fay and I have a big house on the beach and would welcome any of the gang who are cruising in these waters."

Headed "Coast Artillery School, Fort Monroe, Va.," a letter from Walter Biggar, a captain in the Coast Artillery Corps, to

Jack Hanley reads: "Believe it or not, I'm writing to answer a card you sent me the latter part of November last year. I've had my first bit of leisure for six months and have been straightening things out, including my correspondence.

"Toward the end of last year I began to get somewhat restless to do something to help along the war effort, and offered my services. After filling out a number of lengthy questionnaires and having personal interviews, physical examinations, and periods of waiting, I very suddenly received a telegram ordering me to Fort Monroe as a captain in the Coast Artillery. I was in the Engineers in 1918 and so was surprised at the assignment. I've been here since the first of the year. First I went to school and learned algebra, trigonometry, and logarithms all over again, and then got into artillery and many allied subjects. The school was hard, but I enjoyed it all the way and was pleased to see that I still could learn a few new tricks. The course finished May 22, and I was detailed to the school as an instructor in the same subjects I had studied there. In fact, I have a couple of M.I.T. men in my classes. The Coast Artillery is training a large number of officers with previous military experience, giving them commissions from civil life. Pass the word around if you know anyone who would like to get in. The average age of men in my group was about 40. They call us 'retreads.' Of course it takes a good carcass.

"M.I.T. is sure doing a lot for the Army. I run into a great many officers who have taken special courses there. Wish I could have made the reunion, but I had to take my leave in May, between the time I finished the school and started as an instructor."

After all the happiness of reunion, I must turn to the sad side of things. On May 25, George R. White, general manager of the C. W. Potter Company of Waltham, died in his sleep at his home in Swampscott. — GRETCHEN A. PALMER, *Secretary*, The Thomas School, The Wilson Road, Rowayton, Conn.

1919

The Class held a dinner meeting at the Winthrop Hotel, New York City, on Wednesday, September 15, with the following in attendance: M. A. Michaels, A. L. Muller, Herbert Best, Ray Bartlett, E. R. Smoley, Fred Given, B. S. Coleman, Bob Bolan, Harry Mardoian, Timothy Shea, and H. A. Herzog. It was decided at this meeting to go ahead with the plans for the 25th reunion, to be held in Boston. Duke Herzog assisted your Secretary in listing the members of the Class geographically and in assigning various lists to committee members for follow-up in the collection of bonds, answers to the questionnaire, and snapshots for the 25-year reunion. The support of everyone in the Class is solicited in furnishing information for the biography and in obtaining the bonds. These bonds are to be made out to Massachusetts Institute of Technology, A Corporation, Class 1919 Fund, Cambridge, Mass.

Among those from whom bonds have recently been received are A. R. Wiren of New York City; Bob Hackett, Vice-president of Nichols and Company, Inc., 140 Federal Street, Boston, makers of

1919 Continued

worsted top; Marshall B. Lee of Bird and Son, Inc., Boston; Carl L. Svenson, Associate Professor of Heat Engineering, M.I.T.; and Karl F. Rodgers, who has been on special war work since 1941 for the Bell Telephone Laboratories. Responses to the request for biographical information and for snapshots have arrived from Hackett; from Rodgers; from Ray Bartlett, who is at present located in the New York office of MacDonald Brothers, Inc., management engineers, of which he is vice-president in charge of surveys; and from Rogers Bruce Johnson, 42 Oak Street, Belmont, Mass., inspector of grounds and buildings at Harvard University.

Your Secretary regrets to announce the death of Stanton H. Breed on June 18. Burial was in Lynn, Mass. Mrs. Breed's address is R.F.D. 2, Winsted, Conn.

E. H. Aldrich is a partner in the firm of Newsom and Aldrich, consulting civil and sanitary engineers in New York City. They are at present engaged in a \$7,000,000 program of water-supply work for the Hampton Roads area of Virginia and are also in charge of design and construction of 80 miles of pipe line, six pumping stations, two dams, and three filter plants.

Since April, 1942, Willis C. Brown has been a member of the staff of the United States Office of Education, working as a special representative attached to the office of the Director of War Production Training. His special responsibilities include uniformed military training in public vocational schools and the Signal Corps enlisted reserve program that trained 60,000 personnel for the Signal Corps on a civilian status.

Several honors have come recently to Bernard S. Coleman. He has just been appointed public member and chairman of Tri-partite Panels, Second Region, National War Labor Board. He is also panel member of the New Jersey Mediation Board. In its June issue, the New York Tuberculosis and Health Association *Journal* carried a write-up, headed, "Bernard S. Coleman Is Honored by Sanatorium Conference." At a dinner given at the clinical section of the conference at Sherry's, he was presented with a wrist watch as evidence of appreciation of his leadership and service to the section.

Louis A. Brown, Jr., of 3629 San Pasqual Street, Pasadena 8, Calif., resigned from Lights, Inc., in April and is now engaged in developing an industrial management counsel under his own name. On his recent trip south of the border, he found many M.I.T. men active there in different fields. He hopes that any of the Class will look him up when they get out to the Coast.

The August 25 issue of the *Virginian-Pilot* carried a news item about Frederick Roy Hewes, a captain in the Civil Engineer Corps, who arrived in Norfolk, Va., to assume the duties of public works officer of the Fifth Naval District. Prior to this change, he was in Washington, D.C., as principal assistant to Rear Admiral J. J. Manning, director of the Atlantic division of the Bureau of Yards and Docks. He entered the naval service in 1921 as a lieutenant in the Civil Engineer Corps. He served at Puget Sound; at Pearl Harbor; at San Diego and Sunnyvale, Calif.; in the Aleutian Islands; at Coco Solo, Canal Zone; and at the Norfolk Navy Yard.

Paul D. Sheeline dropped us a line from North Africa on June 28. He is a colonel in the Air Corps. Paul was called to active service as a major in the Air Corps, went first to England, and then to North Africa with Jimmy Doolittle '24. After the North African campaign was finished, he was commanding officer of all air transportation in North Africa.

An Orange, N.J., newspaper item in August told of Frederick J. Given and his five-week trip to England as chairman of a special technical mission dealing with engineering problems on war communication equipment. Fred was called from his regular duties in the technical staff of the Bell Telephone Laboratories to serve on this mission for the War Production Board. He was attached to the Harriman mission covering lend-lease matters at the United States Embassy in London. Fred, as a former member of the South Orange Defense Council in charge of setting up the local control center and air-raid warning system in civilian defense, took the opportunity to visit some of the London control and sector post stations. The write-up covered a very interesting discussion of Fred's experiences with air raids in London and his comments on their organization in handling such raids. While in London, he ran into Oscar deLima, who is connected with the United States Navy on operations work.

Your Secretary had lunch with Cutter Davis on August 4. Cutter was on his way to Washington. He is still doing war work in Springville, N.Y. — Elisabeth Coit, whose present address is 3412 Que Street, Northwest, Washington, D.C., has been an architect engaged in private practice in New York City. She was the holder of an American Institute of Architects' Langley scholarship for research in housing. She does some commercial design and estate work and much committee work in the New York chapter of the A.I.A. and for housing associations. — Max Untersee writes from Providence, R.I., where he is still occupied in the war housing program. — Bertram H. Southwick is assistant superintendent of power at the General Electric Company in Lynn, where he is in charge of construction and operation of all power-plant equipment under management of the G.E. River Works. — S. Albert Kaufman is at present inspector of rubber with the Boston Quartermaster Depot.

Since the last Review, many classmates have changed their addresses: Alan G. Richards has moved to 340 Common Street, Belmont 78, Mass.; F. A. Weiskittel, a captain in the Army, is located at Camp Seibert, Ala.; E. Russell Hubbard has moved to 735 Elm Avenue, Teaneck, N.J.; Robert Insley shows 1097 Grayton Road, Grosse Pointe Park, Mich., for his present location.

Other new addresses include those of Robert S. Bolan, 195 Soundview Avenue, White Plains, N.Y.; George W. Cann, 238 Crosshill Road, West Park Station, Philadelphia, Pa.; Laurence W. Cartland, 10 Chestnut Street, South Dartmouth, Mass.; Thomas J. Hughes, 139 Hudson Street, Syracuse, N.Y.; Charles W. Hyde, 2909 Mapleshade Road, Ardmore, Pa.; Captain W. Barrington Miller, Post Office Box 642, Langley Field, Va.; William M. Murphy, 97 Decker Street, Milton, Mass.; Commander Roger T. Hall, Casa de Vallejo,

Vallejo, Calif.; Stuart J. Hayes, 20 Fairfield Street, Springfield, Mass.; Lieutenant Commander D. Arthur Lundquist, 8012 Piney Branch Road, Silver Spring, Md.; Captain Henry E. Wilson, Public Works Officer, United States Navy Yard, Pearl Harbor, Hawaii; Thomas L. Goodwin, Jr., 144-30 35th Avenue, Flushing, Long Island; William R. Osgood, 2929 Macomb Street, Northwest, Washington, D.C.; Maurice H. Role, 81 Walnut Park, Roxbury, Mass.; Frederick G. C. Smith, Jr., Wyckoff Park, Holyoke, Mass.; Lieutenant Colonel James M. Strang, 58th General Hospital, Camp Livingston, La.; and Horace D. White, 24 Lake Shore Drive, St. Joseph, Mich. — EUGENE R. SMOLEY, *Secretary*, The Lumus Company, 420 Lexington Avenue, New York, N.Y. GEORGE W. McCREERY, *Assistant Secretary*, 131 Clarendon Street, Boston 16, Mass.

1920

Hope you all had a good summer and some vacation to put you in shape for the strenuous winter ahead. Classmates in the armed forces continue to give evidence of their importance in the great conflict by the promotions they have received. In the Army, Lincoln Chambers is a colonel. His present address is 2130 Lincoln Park West, Chicago. Alexander Nikitin is a major, located at the Pine Bluff Arsenal, Pine Bluff, Ark. Ed Howard, I, is a lieutenant commander in the Navy, and so is Henry Dooley, who is now stationed at the United States Naval Station in Key West.

I am sorry to report the death of Gustaf B. Bengtson, IV, who passed away on May 10 in Seattle, Wash.

At the University of South Carolina, Bob Sumwalt has been graduated from professor to dean, and his address is 733 Sweetbriar Road, Heathwood, Columbia, S.C. Ray Reese may be reached at Post Office Box 58, Toledo, Ohio. Bill Forbes is now located in New Bedford, at 117 Clinton Street. Eric Etherington is now with Goodbody and Company, 115 Broadway, New York. John Lucas has come back from Bermuda and is now at Cloverly Circle in East Norwalk, Conn. Frank Lawton is still with the Texas Company but no longer at Houston. He is at their New York offices, 205 East 42d Street. Stan Harris is now at Castle Shannon, Pa., at 6 Chestnut Street. Franklin Badger has changed his address to 1368 Commonwealth Avenue, Allston, Mass. Ed Ryer, who is a vice-president of the Alumni Association, has moved from Wellesley Hills to 119 Allerton Road, Newton Highlands.

Perk Bugbee, the well-known general manager and radio speaker of the National Fire Protection Association, recovered from an emergency appendectomy in time to do his stuff for Fire Prevention Week early in October. — This seems to me like mighty skimpy news considering the three months' gap since the last notes, but, as I have often remarked, I can't manufacture the news. Won't some of you please contribute? The only cost is a three-cent stamp. — HAROLD BUGBEE, *Secretary*, 7 Dartmouth Street, Winchester, Mass.

1921

Greetings to all of you, and a special welcome to those who have returned to the fold via the Alumni Fund route. From ob-

1921 *Continued*

servations on a recent trip to the Institute, your Assistant Secretary can vouch for the value of your generosity and the appreciation with which it is received. Despite the brevity of these wartime notes, we need your letters more than ever before to maintain our records and to keep the larger group now receiving The Review advised of your doings. Letters are particularly wanted from those in the services both here and abroad.

The late Lieutenant Commander Howard Raymond Healy, XV, was honored by the United States Navy on July 4 by the launching of a new destroyer, the U.S.S. *Healy*, at the yards of the Federal Shipbuilding and Dry Dock Company, Kearny, N.J. The destroyer was christened by Mrs. Healy at simple ceremonies attended by members of Howard's family and representatives of Technology. Howard's mother, Mrs. Thomas P. Healy of Roslindale, Mass., was on the launching platform, and his two sons, Howard, Jr., nine years old, and Michael, four, rode down the ways aboard the destroyer. Representing M.I.T., the Alumni Association, and the Class were Francis J. Chesterman '05, President of the Alumni Association, James M. Evans '16, and your Assistant Secretary. Also present were Gordon G. Holbrook '10, general superintendent of the shipyard, and Commander George A. Holderness, Jr., '28, the Navy supervisor of shipbuilding at the yard.

Commander Healy was the first member of the Class reported killed in action in the present war. As damage control officer of the aircraft carrier *Lexington*, he was lost in the Coral Sea battle on May 8, 1942, risking his own life to save 95 per cent of the ship's officers and crew. He was born in Chelsea, Mass., on March 28, 1899, and entered Technology on graduation from Chelsea High School. He was appointed to Annapolis and, on graduation in 1922, he taught ordnance and gunnery at the Naval Academy. He also received a master's degree from the University of Michigan. Prior to assignment to the *Lexington* in 1941, Howard was commander of the destroyer *Dorsey* and also personnel and safety officer of the Newport naval torpedo station. He received the Victory Medal, the American Defense Service Medal, and the Fleet Clasp. Just before the launching of the *Healy*, it was announced that he had been posthumously awarded the Purple Heart.

Lieutenant Commander L. Willis Bugbee, Jr., XV, has brought his history up to date with a letter which reads, in part: "I went into the Navy the month after Pearl Harbor, having filed my application earlier in 1941. I spent most of 1942 at the Washington Navy Yard until my petition to go to sea was granted. My job is chief engineer of the ship, or 'engineer officer' as it is officially designated, and I could not ask for a finer group of officers and men. It is good to get back to sea again. South America is now the only continent I have not visited. The *Chicago News* published an article about our ship. Captioned 'Floating Navy Yard Helps Lick 'Em by Proxy,' the article is dated at an advanced South Pacific base and says: 'Her name is the U.S.S. *Vestal*. She's a repair ship. Her complement is around 600 men, of whom more than 500 are rated specialists — trained technicians. She sits here under a blistering tropical sun at a

base not so far removed from the action zones but what the Japs come over and bomb it once in a while. In short, the '*Vestal*' is a hospital ship for sick and wounded ships, healing their wounds and putting them back in the fighting line or keeping them in fighting trim. . . ."

Henry R. Kurth, VI, Class Representative on the Alumni Council and for many years assistant chief of electrical operations in Boston Edison's production department, has been appointed chief of electrical operations. Chick has been with the company since 1922.

George W. Spaulding, VI, President of the M.I.T. Association of Baltimore, has been elected a vice-president of the Pennsylvania Water and Power Company. Whit has been with the organization since 1924, having been successively test engineer, assistant chief of tests, assistant to general superintendent in charge of power studies and system planning, assistant chief engineer co-ordinating engineering studies and construction activities, and, most recently, the superintendent of power.

Eliot Underhill, X, has been appointed general plant superintendent of the new mill of the Manganese Ore Company, agents for the Metals Reserve Company. Melvin R. Jenney, VI, is a partner in the new firm of patent attorneys, Churchill and Jenney, with offices in the Statler Office Building, Boston. Sherman E. Nichols, XV, has left Cincinnati and is now associated with Lac Chemicals, Inc., Culver City, Colo. Stuart E. Bradford, I, has received a new assignment from Pan American Airways and is now located in Puerto Barrios, Guatemala.

The new M.I.T. student directory lists the following sons of members of the Class: Garvin Bawden, Jr., son of Mich Bawden, XV; William W. Conant, son of Larry Conant, XV; Alexander E. Halberstadt, Jr., son of Al Halberstadt, VI; Lewis W. McKee, son of Captain Andrew I. McKee, XIII-A, of the Navy. It will also be of interest that the sons of Nellie Carpenter, XV, and Count Littlefield, X, are also at the Institute. With one exception, the boys are in the Navy program.

Whitney K. Avery, II, died suddenly on June 5, at his home, 16 Carol Lane, Bergenfield, N.J. Whit had been an engineer with the Holmes Electric Protective Company, New York City, ever since graduation, most recently in the commercial division. He was a native of Brockton, Mass., and came to the Institute from Brockton High School. He leaves his wife, the former Clara Kirk, a graduate of Gordon College of Theology and Missions, Boston, and three children: William Kirk, 15 years old, Elizabeth Anne, 10, and Joan, 8. On behalf of the Class, we wish to extend sincerest sympathy to his family. — To Captain John D. Crecca, XIII-A, of the Navy and to Mrs. Crecca we also express sincere sympathy in the passing of their daughter, Genevieve, a senior at St. Mary of the Woods College.

Daniel Noce, I, brigadier general, has been appointed to the European General Staff as chief of amphibious operations. Edgar E. Hume, a permanent colonel in the Medical Corps, has been named chief health officer of the new Allied Military Government of Occupied Territory. Military statistics for the month show 13.9 per cent of the Class in the services — 92 in the Army and 31 in the Navy. Promotions and additions to the list are given in the "M.I.T. Men at War" section of The Review.

We are omitting the long list of address changes received during the summer. Your Assistant Secretary or the Register of Former Students at Cambridge will be glad to furnish addresses. The Alumni Association will forward all letters sent to them for men in the armed forces.

For Thanksgiving, our thanks go to you for your letters of the past and those in prospect; thanks, too, for your support of the Alumni Fund, which is so splendidly helping Technology support the war program. Our advance Christmas and New Year's greetings to those of you in distant lands. May you return soon to enjoy the victory you are winning. — RAYMOND A. ST. LAURENT, *Secretary*, Rogers Paper Manufacturing Company, Manchester, Conn. CAROLE A. CLARKE, *Assistant Secretary*, Federal Telephone and Radio Corporation, 1000 Passaic Avenue, East Newark, N.J.

1922

On June 8 the Class held an informal dinner at the Technology Club in New York. Twenty-five members attended. Frank Kurtz was toastmaster, C. George Dandrow spoke as president of the Technology Club of New York, Bill Mueser talked about the scholarship fund, and Don Carpenter and Dunc Linsley spoke briefly as members of the Corporation. Our President, Al Browning, came up from Washington especially for the dinner and was the speaker of the evening. Movies of our reunion in 1942 were shown.

War news has been improving steadily throughout the past summer. No small part of our successful war effort can be attributed to Albert J. Browning, a brigadier general in the Army Service Forces. A very complimentary article about General Browning is to be found in the August 30 issue of *Time* magazine which, in reviewing the splendid work that he has done during the past three years in Washington, describes him as "dapper, red-tape-hating Brigadier General Albert Jesse Browning." In commenting on his promotion, Al writes: "While I was overseas, the President saw fit to recommend me for a promotion, which, of course, was welcome."

Bill Mueser reports that the scholarship fund is not progressing as well as we had all hoped. Now that the income tax situation for 1943 is clear and on paper, give some earnest thought to helping to build up the scholarship fund. Write in your checkbook now, or at least make a note on your calendar.

We regret to report the death of two of our classmates during the summer. Charles Mason Tucker, V, chief chemist and factory manager of the Joseph Burnett Company, Boston, died suddenly while at work on June 9. He lived in North Andover, where he was chairman of the Planning Board and had served on the Board of Public Works. He was a member of the Richard C. MacLaurin Lodge of the Masons, and a deacon of the Congregational Church. He is survived by his father and his widow, Mrs. Miriam Campbell Tucker.

Montgomery Knight, VI, died in Atlanta, Ga., on July 25 after an illness of several months. After being graduated from

1922 Continued

the Institute, he attended graduate schools at Johns Hopkins and Harvard, and he later became a member of the Aeronautics Department at M.I.T. and a director of the atmospheric wind tunnel section of the National Advisory Committee for Aeronautics at Langley Field, Va. In 1930, he became the first director of the Daniel Guggenheim School of Aeronautics of the Georgia School of Technology, where he became recognized as a leading authority on helicopter design. He is survived by his wife, the former Emily Millner of Norfolk, Va., a daughter, and two sons. — CLAYTON D. GROVER, *Secretary*, Whitehead Metal Products Company, Inc., 303 West Tenth Street, New York, N.Y. WHITWORTH FERGUSON, *Assistant Secretary*, Ferguson Electric Construction Company, 204 Oak Street, Buffalo, N.Y.

1923

Howard Russell has resigned as our Class Representative on the Alumni Council. This is because he moved to New York on September 1 to be associate manager of the Improved Risk Mutuals, a large underwriting organization handling fire insurance on industrial properties. To him go the thanks of the Class for his services, and best wishes in his new job.

Bernie Proctor, Professor of Food Technology at the Institute, in June was appointed to the research and development branch, Office of the Quartermaster General. He is director of subsistence research. Another member of the Class I see from time to time in Washington is Colonel Alfred B. Johnson, who has an important assignment in the Provost Marshal General's office.

A clipping from the Boston *Globe* in June reported that E. Fletcher Ingals was injured when the plane in which he was flying alone crashed in the remote mountain hamlet of Headville, 18 miles southwest of Rutland, Vt. His injuries included multiple bruises and a possible leg fracture. Ingals' flying career dates from World War I. He is regional engineer in Boston of the Civil Aeronautics Authority. — Captain Antonio S. Pitre was mentioned in the *Rocky Mountain News* of Denver, Colo., in August, when he was in that city to award an Army-Navy "E" to a local company. Pitre is production officer of the Mare Island Navy Yard at San Francisco.

The Alumni Office has received word of the death on June 19, 1942, of Edward W. Hollister of Spartanburg, S.C.

There are a number of military titles to be recorded which will be of interest. Some of these are promotions, and others are simply reported because of new assignments. In the Army: William E. R. Covell and Hermon F. Safford, brigadier generals; Robert M. Carswell, colonel; and Martin H. Burkes and Percy P. Pratt, lieutenant colonels. In the Navy: Floyd A. Tusler, captain; and Julian S. Loewus and John H. Neher, lieutenant commanders. — HORATIO L. BOND, *Secretary*, 457 Washington Street, Braintree, Mass. JOHN M. KECK, *Assistant Secretary*, 207 Bloomfield Avenue, Bloomfield, N.J.

1924

Frank Barrett has been traveling over the country and wound up August on the West Coast. He reports finding Perry Maynard a

lieutenant colonel in the Signal Corps in Washington, D.C., where he has transferred from the American Telephone and Telegraph Company. Other military news can be found in the "M.I.T. Men at War" section of The Review, but special mention must be made that Major Hank Shore is now Lieutenant Colonel Henry Shore.

Paul Cardinal, bemoaning the absence of '24 news in recent issues of The Review, comes up with the announcement of Carolyn Marie, born June 11, making the score 4 girls and 3 boys. Any competition for Paul? — Our New York correspondent, Anatole Gruehr, was awarded the degree of doctor of philosophy (in economics and sociology) by New York University in June. Dr. Gruehr reports that Bill Correale is at the Desert Training Center in California, where he is getting a real workout, and that Bill Apleton V-mailed news of his arrival in North Africa this summer.

— Joe Mares, after training a successor, has left his special work at the Institute and returned to St. Louis. Pret Littlefield is now treasurer of Canada Dry Ginger Ale, Inc., and is living in Darien, Conn. John Tatman has left Carnegie-Illinois Steel Corporation to become a metallurgist for the Wheeling Steel Corporation, Steubenville, Ohio.

Hugh and Mrs. Perrin have moved from Massachusetts to Winter Park, Fla.; and Jack Jackson, an Honorary Secretary of M.I.T., has moved from Lynchburg, Va., to Washington, D.C. Lloyd Porter returned to Taunton, Mass., from the British West Indies; Russ Ambach is also back in Massachusetts, having moved to Springfield from Providence; and F. O. Billings has transferred from Washington, D.C., to Spokane, Wash. Dewey Nelson was reported to have moved from Massachusetts to Wichita, Kansas, but the Alumni Office has had mail returned from his address there.

Your Assistant Secretary starts his 20th year with the Elliott Addressing Machine Company in Cambridge, where war work makes business far from "as usual." While pinch-hitting for Frank, I'll be looking for news. Hope some of you will find time in these busy days to write to me. — FRANCIS A. BARRETT, *General Secretary*, 195 Broadway, New York, N.Y. GEORGE W. KNIGHT, *Assistant Secretary*, 36 Arden Road, Watertown 72, Mass.

1926

John H. Wills, who was teaching at Princeton, has now moved to Chicago, where he is second vice-president of the Northern Trust Company, with duties as associate economist. — James E. Pew has been appointed assistant director of the division of natural gas and natural gasoline in the Petroleum Administration for War. Pew was associated with the Virginian Gasoline and Oil Company in Charleston, W.Va., from 1926-1942, when he was called to the Petroleum Administration as a member of the production division. — C. B. McFarland, a lieutenant commander in the Naval Reserves, is resident civil engineer at the United States Naval Hospital in Chelsea, Mass. Prior to this detail, he was civil engineer at the naval air station in Jacksonville, Fla.

Recent visitors to the Institute include A. F. Horle, who was up from Mexico for a month's vacation; Stewart S. Perry, who is

sales engineer with the Worthington Pump and Machinery Corporation in Boston; Maurice Davidson, who is with the Bell Telephone Company in Philadelphia; and D. K. Luster, who is with the Hathaway Manufacturing Company in New Bedford.

Mr. and Mrs. E. N. Roberts have announced the birth of Elizabeth Ann at Potrerillos, Chile, on June 5. Mr. and Mrs. Helmut W. Geyer announce the birth on May 19 of Anita Maria Geyer in Pasadena, Calif. On May 22, Helen Fuller of Westport, Conn., was married to Theodor Carl Muller.

Ken Lord wrote in June: "I was with the War Production Board tools division until January, where the apparent decline in demands gave me the chance to get away from Washington. I still have to go back monthly on my present assignment. It was pleasant to renew friendship with Mooney Owen, Jack Larkin, and Ave Stanton. Through the latter, I learned that Guy Frisbie now comes or goes to Washington. Bill Lowell dropped in frequently while I was New-Dealing." Ken is back in Cleveland with the Reliance Electric and Engineering Company.

Elmer Warren, who held the office of registrar and several other portfolios at Colby College, now writes from the registrar's office of the Army Air Forces' school of applied tactics at Orlando, Fla. Thus he is applying his civilian experience for the benefit of the Army. The Army Air Forces' school of applied tactics is organized on the basis of giving training under conditions approaching as near as possible those in actual combat.

The Secretary regrets very much to record the death on July 27 of Kenneth R. Shaw in Easthampton, Mass. Ken was assistant general manager and assistant treasurer and director of the Easthampton Rubber Thread Company and director of the United Elastic Company. He was also a member of the board of directors of the First National Bank of Northampton. He is survived by his wife, the former Margery Fields, whom he married in 1927, and their three children.

The Goodyear Company recently announced that William Taylor is one of the company's "cycleweld" development experts, who are now housed in Goodyear's big new research building in Akron. Taylor started with Goodyear in 1927 in the mechanical goods compounding department and was transferred to research in 1934. His research work has included, in addition to his developments on "cycleweld," studies in airships, synthetic rubber, and other subjects.

Major Robert W. Rogers writes: "I'd like to ask you to record a new address for me as of September 25th. After that date, I shall be at 3430 Gunston Road, Alexandria, Va., and my family will be with me instead of at my permanent address in Barrington, R.I. Since returning to the States, I've seen a number of Technology men, who seem to be doing pretty well. Art MacLean '25 and Don Horton '28 are now both lieutenant colonels.

"For a very hasty résumé of my travels, I can say this: I went on duty at Fort Belvoir in August, 1941; spent the time from September, 1941, to May, 1942, at Westover Field, Mass.; then went to England and to North Africa in October and November. I

1926 *Continued*

came back here in March of this year, and I'm on the staff of the Air Engineer. In the field I was with an engineering aviation unit, which I hope I may be pardoned for considering the finest unit in the Army.

"Incidentally, detail to an engineering aviation battalion is about as choice an assignment as one can have. They're engineers in the Army Air Forces, and are as completely and splendidly equipped as it is possible to make them. Their job is to build, repair, defend, and sometimes capture advanced air bases. There have been some remarkable records made in construction, and there are plenty of aviation engineers in all theaters."

A recent issue of the *New Yorker* contained a glowing account of the work of Dick Pough, who achieved fame as the "feather detective." Dick is with the National Audubon Society and keeps an eagle eye out for violation of the laws protecting birds. He has waged an unceasing campaign against the illegal use of feathers, as in hats, and seems to have an uncanny capacity for recognizing forbidden feathers when they appear on some of the extraordinary hat creations which are the current mode. — JAMES R. KILLIAN, JR., *General Secretary*, Room 3-208, M.I.T., Cambridge 39, Mass.

1928

Last month at Farmingdale, L.I., Harold H. Budds, Vice-president and general manager of the Ranger Engines division of the Fairchild Engine and Airplane Corporation announced the promotion of Ev Lester to assistant general manager. Ev was assistant chief engineer before this promotion. Nice going!

Bob Harris has had two papers published in dietetic journals. The first was entitled "Effect of a Supplementary Food on the Nutritional Status of School Children," and the second was on the "Effect of Restaurant Cooking and Service on Vitamin Content of Food." The last article was particularly interesting to most of us who eat at least one-third of our meals in restaurants. Bob reported that surprisingly high losses occurred in ascorbic acid and thiamin when foods are cooked and served under restaurant conditions. In some cases these losses exceed 95 per cent of the vitamin B₁ and C content of vegetables.

Bob Jones, a native of Kosciusko, Miss., is one of the Goodyear Tire and Rubber Company's research experts now working in Goodyear's big new research building in Akron. Erected at a cost of nearly a million dollars, the Goodyear research building is described by research and development engineers as probably the most modern in the entire country. Bob lives at 855 Carroll Street, Akron, Ohio, and makes a hobby of the study of inventive psychology.

Here's an interesting excerpt from Ernie Knight's latest letter: "Four weeks ago I was sent from Jefferson Barracks to attend a command and general staff school. This is a nine weeks' course in which they grind out officers supposed to be ready for staff and command work. And they sure do grind, in a way that even M.I.T. never thought of! And believe me, after being away from concentrated study, it is something to go back to it again and start off with a bang, going without a break, six solid days a

week, day and night. But I am still hanging on, and I hope I can hold out until the end and make the grade somehow. It really is a wonderful setup and is supposed to be about the best of its kind in the world, but under the speed and pressure of wartime conditions it is pretty rough, especially for anyone in my position. I am in with and up against officers who have had a lot of experience at staff and command work and many of whom are West Point men. Most of them are colonels, lieutenant colonels, and majors, and a lieutenant is almost an unknown breed. Speaking of rank, I have been a captain for over a year."

Thanks go to Jim Donovan, Treasurer of the Artisan Metal Products, Inc., for the following news note: "I have just had a card from Vermillion, S.D., announcing the birth of a son, Walter Ronald Nock, to Mr. and Mrs. Walter J. Nock. Walter is, I believe, still with the American Smelting and Refining Company in Mexico."

Certainly one of the outstanding aviators in this war is our own Ben Kelsey. Many of us read, I am sure, that grand article in *Life* magazine recently which described the development of the P-38 Lightning from a "death trap" and "hoo-doo ship" to its present position as about the tops in fighter planes. *Life* paid great tribute in this development to the skill and bravery of Colonel Kelsey, who almost singlehandedly made the plane a success.

I am indebted to Ralph Jope for the following interesting summary of his recent visit with Ben at the Review Office: "Ben was in to see me today, and after much pumping and questioning about the ribbons which he was wearing on his chest, I learned that he was awarded the Distinguished Flying Cross in 1938 for landing a valuable plane which had caught afire. He was also awarded the Air Medal for being one of the first group of pilots to fly the P-38's over the Atlantic. Only recently he was awarded the Distinguished Service Medal for exceptionally meritorious service.

"The following piece appeared in the Stamford, Conn., *Advocate* of August 7, 1943: 'For "exceptionally meritorious service" in developing the P-38 plane, Col. Benjamin S. Kelsey of Waterbury has been awarded the Distinguished Service Medal, the War Department announced last night. Col. Kelsey's citation declared that it was for "exceptionally meritorious service in a duty of great responsibility from July 30, 1940, to May 24, 1943. In the capacity of project officer for the production division of the Army Air Forces, Col. Kelsey co-ordinated the work of others in the development of an airplane which has achieved outstanding tactical success. He contributed more than any other individual to the advanced engineering development of the P-38 and conducted many tests, frequently at the risk of his own life, to secure vital scientific and technical data. Without his untiring effort, courage and faith, this aircraft would not have attained its present stage of military utility. Col. Kelsey's expeditious accomplishment of an extremely important assignment reflects great credit upon himself and the Army Air Forces.'"

"Ben is the father of three youngsters — all boys, aged 6, 3, and two months, respectively. Recently, he broke his foot when he bailed out of a plane which cracked up. The foot is now healing, and

he is able to go along without any limp, although he does use a cane."

Harold T. Blackwood, who was general manager of the Mexican Candelaria Company, has been appointed the principal mining specialist of the Board of Economic Warfare in Washington. — Our orange blossoms department has been running light recently, but we now have the pleasure of announcing the recent marriage at Nahant of Kenneth L. Keith, a lieutenant, junior grade, and Thelma M. Reeves. The Keiths are planning to live in Los Angeles when Ken returns from active duty. Congratulations! — GEORGE I. CHATFIELD, *General Secretary*, 6 Alben Street, Winchester, Mass.

1930

We enter the new volume of The Review with the usual requests for class news and for contributions to the Alumni Fund. The Secretary is at a disadvantage because his words reach only subscribers, while our Class Agent's letter for funds reaches the entire Class. Phil Holt is at the task again this year, and he is depending on all of us to keep '30 climbing to the top in Fund contributions.

Priscilla, the first-born of Hermon and Eleanor Scott, arrived in August. The Class rejoices with Scotty. Professor Locke '94, Alumni Secretary, reports that Denis Agar is superintendent of the Pickering, Ont., plant of Defense Industries, Ltd., and that Joe Twinem has become administrative engineer for the San Francisco Ordnance District of the War Department, after superintending private mining interests in Colorado.

The Alumni Office reports the death of Thomas Grace, X, on August 12, 1942. — Friends of George Nakashima, IV, will be interested to learn that he is now located at Raymond Farm, New Hope, Pa. Jim Merrill, X, recently received a War Production Board merit award for his developments in bullet-sealing fuel tanks. Jim is a research engineer with Goodyear in Akron, where he has worked since 1930. The Merills have four children.

Jack Bennett keeps us pretty well posted about the Akron boys. Jim Holden is in the patent department of Goodyear, while Ted Riehl and Fluque Rowzee are involved in the synthetic rubber program. The latter is in Canada running Goodyear's end of a government-sponsored combination of rubber interests. Jack is with Goodyear Aircraft and is enjoying a new home in Hudson. For reports of our classmates who have received promotions in the armed services, and those who have recently joined up, see the "M.I.T. Men at War" section of The Review. Congratulations and best wishes to all. — PARKER H. STARRATT, *General Secretary*, 1 Bradley Park Drive, Hingham, Mass.

1933

The following information has been gleaned from newspaper clippings: Moreland G. Smith is now a major. Randolph Braxton, a lieutenant, married Rosamond Pierce on May 23. They are living in Buckingham, Va. Jack Andrews was married on May 22 to Phoebe Smith in Maplewood, N.J. Dorothy A. Chapman has joined the WAVES.

A letter received from Beaumont Whitton bemoaned the lack of '33 news columns. We

1933 *Continued*

are sorry about that, but no news means we have nothing to tell you. Beau was laid up last spring, but we hope that everything is O.K. now.

We hear that Bob Kimball has a new home, and wish him happiness in it. If you get to Boston, give him a call at the Institute. — **GEORGE HENNING, JR., General Secretary**, Belmont Smelting and Refining Works, Inc., 330 Belmont Avenue, Brooklyn 7, N.Y. **ROBERT M. KIMBALL, Assistant Secretary**, Room 5-119, M.I.T., Cambridge 39, Mass.

1934

The following news of Ed Bateman was received in a letter written by his father on February 8: "Edward is a captain in the South African Engineer Corps, and is at present a prisoner of war in Italy. He was captured at the fall of Tobruk in June, 1942. He was on the staff of the chief engineer of a South African division, and of course staff engineers have not much chance of escape in a mix-up like there was at Tobruk, where they have to go on to the bitter end with their demolitions."

"I take pleasure in advising you that for his work in saving the waterworks at Bardia, Edward has been mentioned in dispatches. He was in fact recommended for the Military Cross, as he went in with the first wave of the attacking forces at Bardia and set off on his own with his batman and driver to the waterworks, where he took the waterworks guard of 37 as prisoners and prevented them from blowing up the waterworks, which they were all ready to do."

In addition, a note in *Dorco Doings* of June 1 states that Ed is as satisfied as a prisoner of war can be, that the housing and food at the camp is much better than anything he hoped to get in Italy, that he is killing time by attending classes on a pretty wide range of subjects, and that in addition he is himself lecturing on mechanical engineering. It is good to hear this news about Ed, and we hope that with the fall of Italy he has been liberated.

A note from the father of Winold Reiss supplies us with news of three of our classmates. Win is a major in the Corps of Engineers overseas, Freddy Vaughan is a captain in the Pacific war theater. George W. Muller, Jr., is a sergeant with a weather squadron abroad.

Nick Dumbros is working in Washington as a petroleum production analyst for the Petroleum Administration for War. — Herbert W. McKeague, formerly assistant purchasing agent in the Westinghouse Electric and Manufacturing Company's radio division at Baltimore, has been appointed purchasing agent in the transformer division of the company's Sharon works. He came with Westinghouse in 1940 as buyer and assistant purchasing agent in the company's radio division.

Dick Taylor is all set to join the ranks of the benedicts. He is engaged to Margery Poole, daughter of Mr. and Mrs. James P. Poole of Hanover, N.H. The wedding was scheduled for fall. Dick is now a research associate in the Electrical Engineering Department at Technology. — Francis Grey Jenkins, a major, took unto himself a wife in Newton, Mass., on June 26. His bride was Anne Russell Mather, daughter of Colonel and Mrs. John Mather. Colonel

Mather '07 is commandant of the Watertown Arsenal, where Major Jenkins is stationed.

Next month let's have more news. We know that most of you are doing interesting work, and the rest of the Class would really like to hear about it. So drop all modesty and scratch off a few lines about yourselves or other members of the Class. — **JOHN G. CALLAN, JR., General Secretary**, 184 Ames Street, Sharon, Mass. **ROBERT C. BECKER, Assistant Secretary**, A 322560, First Special Service Force, care of Postmaster, Seattle, Wash.

1937

This summer I received a V-mail letter from Joe Heal, who is with the Lockheed Overseas Corporation. The entire letter is quoted herewith for all to read: "For a long time I've been trying to work myself into a frenzy sufficient to dash off a few lines. Duane Wood, Al Acker, Ken Comsey, and I left Lockheed Aircraft together and transferred to Lockheed Overseas while it was still in its infancy, about February, 1942. We all came to northern Ireland a year ago. Things weren't ready, so we did quite a bit of pioneering until they were finally under way. We all came over in the production planning division, and in that capacity handled all the layout and planning for setting up the base. Last November, Al resigned and returned to California, and six months later we heard that he had a swell job as assistant production manager of an accessories company called the Aerojet Engineering Corporation. We haven't been able to definitely ascertain yet whether there is anyone else in the production department other than the production manager. However, from what we hear it really sounds good."

On this side of the pond, things are breaking very well for the three M.I.T. men. On May 1, Woody became division supervisor of production planning and scheduling, and Ken and I are section leaders, his seconds in command. We handle all the tool cribs, tool planning, tool design, planning, scheduling, expediting, order writing, layout, equipment control, maintenance, reports, statistics, and what have you. If you've ever worked with the Army, you'll realize what these last functions entail. As time goes on, more and more functions are being handed over so that we're really getting experience. In fact I believe that two years here will give me the equivalent of four to six years prior to this little war. On top of it all, we're having a very good time and are really enjoying ourselves. Our quarters are good, the food is good, and town isn't too far away for recreational purposes. Nevertheless, we are all praying for a speedy end to this holocaust. Best of luck from Joe, Ken, and Woody."

From Akron comes word that Robert H. Ritchings of Millburn, N.J., is one of the Goodyear Tire and Rubber Company's research experts who will move into Goodyear's big, new research building, which cost nearly a million dollars and is described as probably the most modern in the entire country. Ritchings, who started in Goodyear's research department in October, 1937, specializes in research and development of bullet-sealing fuel tanks. He is married, and is the father of a two-year-old daughter, Starr, and a young son, Stephen.

A clipping from a Rochester, N.Y., paper informs us that a course in the repair and maintenance of 15-foot heightfinders is being conducted by the Hawk-Eye works of the Eastman Kodak Company, in co-operation with Army Ordnance. One of the two courses is being conducted by Robert S. Reichart. Over 25 men from camps and arsenals throughout the country are taking the courses, and it will be their job to service the heightfinders at battle fronts all over the world. The height-finder in operation is able automatically to record firing angles and compute the height of a speeding plane, relaying data electrically to a gun director which determines the setting of guns. Reichart was employed by the Eastman Kodak Company in 1941, joined the Hawk-Eye engineering force in 1942, and became one of the first to assist in breaking down the heightfinder manufacturing process sufficiently to permit unskilled men and women to work on it.

Baird W. Hodgkinson and Marian B. Kenyon of Dale Road, West Hartford, Conn., have announced their engagement. Hodgkinson is now in the engineering department of the Pratt and Whitney division of United Aircraft. James Warburton, Jr., and Ruth Mercedes Langletz were married this summer. Annis G. Assaf and Patricia Ferry of Kenwood, Md., were married this summer. Dr. and Mrs. Assaf are residing in Cambridge. Charles B. Thorn, Jr., and Willoughby Allen of Washington, Ind., were married in September. Thorn is a lieutenant in the Naval Reserve. Maxwell E. Jacobs and Hazel Klein of Brooklyn, N.Y., were married in August. The ceremony took place at the Hotel St. George in Brooklyn. Jacobs is working for the government. — **WINTHROP A. JOHNS, General Secretary**, 34 Mali Drive, North Plainfield, N.J. **PHILIP H. PETERS, Assistant Secretary**, 159 Glen Road, Wellesley Farms, Mass.

1938

On July 2, Ira Lohman, an Army captain, whipped into town long enough to marry Louise McKinney of Wellesley College and Newton. Jim Gilliss, Al Wilson, and your Assistant Secretary were accomplices. Ira is now at Camp Davis. — On September 11, Paul Sullivan, a lieutenant in the Naval Reserve, was married to Kathleen Whoriskey at Scituate Harbor, Mass.

Jim Acker, who received his master's degree with us, was married to Muriel Lakeland on July 31, at Baldwin, N.Y. He is now a chemical engineer with the West Virginia Pulp and Paper Company in New York City. Lieutenant Bob Flanagan is an instructor at the Aberdeen Proving Ground. He was married on August 14 in Houston, Texas, to Ducile Tenant of that city.

Fred Crocker, a lieutenant in the Marines, is engaged to Mary Van Ness of Brookline. Mary has been teaching in Boston. Fred recently received his commission and aviation designation at Pensacola and is now at Lake City for advanced training. In July, John Sullivan became engaged to Frances Ricketts of Barnard College and Cincinnati. Frank Dowding's engagement to Mary Stevenson of Maryland College for Women and Port Washington, Long Island, was announced in August.

Dave Beaman is now teaching at Duke University. A daughter was born to the

1938 Continued

Beamans in June. News from California reports Don and Betts Weir to be parents. Irving Underhill dropped into the office recently on an assignment for Curtiss-Wright. He is now at their development division in Bloomingdale, N.J.

Lieutenant Merrill Tolman has recently completed officer candidate school at Camp Barkeley, Texas. He is in the medical administrative corps and is now stationed at Camp Pickett, Va. We ran into Fred Stearns a few weeks ago in Harvard Square. He is at the Air Corps communications school there. Paul DesJardins is still giving naval craft their final inspection. He has participated in well over a hundred official trials and is very enthusiastic about the work.

Sad news from North Africa reports that Captain Charles R. Mills was killed in action on July 28, just a year after he went overseas with an engineering battalion. Before reporting for active duty, Charlie had been on the staff at the Institute. His wife is living at 522 Concord Street, Framingham, Mass. — DALE F. MORGAN, General Secretary, Carbide and Carbon Chemical Corporation, 30 East 42d Street, New York, N.Y. RICHARD MUTHER, Assistant Secretary, Room 1-180, M.I.T., Cambridge 39, Mass.

1940

We must regretfully inform the Class of the death of Lieutenant Colonel Henry W. Hurley, who was killed in action in Sicily in July. Hurley received his master's degree as a member of our Class. It was reported that the truck in which he was riding was exploded by a land mine.

A number of replies to our Alumni Fund letter have been received by Tom and me, and we'll attempt to cover all of them in the forthcoming issues. It will take a little time to mention each member individually, but we shall try to include everyone who has sent us a reply.

Several months ago, Major Joe Jeffords wrote me from the Command and General Staff School at Fort Leavenworth, Kansas, where he was an instructor. Joe is instructing in logistics, particularly ammunition supply. The engagement of Olivia Evans to Jeffords was announced some time ago, and perhaps they are Captain and Mrs. Jeffords by this time. — Captain and Mrs. Paul V. Bollerman became parents of a daughter, Martha Louise, in May. Lucille Fortna became the bride of Captain Philip A. Stoddard last July 3. Lieutenant and Mrs. Eugene West announced the arrival of Bradford Collins West on July 29, and your Secretary became the dad of Gary, 2d, in August.

Loren Wood transferred from Curtiss-Wright's St. Louis plant to their research laboratory in Buffalo last March. He is electrical engineer on the new Curtiss 12-foot variable density wind tunnel. Before leaving St. Louis, he was doing static and dynamic strain gauge and vibration work, and some flight test instrumentation. — Tom Creamer will carry on from here.

The following are now working at the Institute: John Danforth, Jack Leschen, Henry Brewer, John McGuigan (on leave from Bell Laboratories), Herb Wohlers, Dick Powers, George Burr, and Jim Shipman. They are connected with research programs. Jack Gray and Ollie Fulton dropped in to see me the end of August, but I was out. Charlie Edwards visited the

Institute the other day. He is working for Western Electric at Kearny, N.J., and commuting from Jackson Heights, Long Island, where he lives with his wife and baby. Don Ross, who has been an aide to General Bonesteel in Iceland, was home for a month's furlough and paid a visit to the Institute.

Al Guttag sent in the following information: Arnie Arch and his wife are living at Niagara Falls, where he is stationed as a captain in the Chemical Warfare Service plant. Sam Wyatt is a research chemist for the Patterson Screen Company at Towanda, Pa. He has been married almost a year to Suzanne Burroughs of West Franklin, Pa. Grover Paulsen is with Merck and Company and is now stationed at Elkton, Va., where he is in charge of one of the development laboratories. Henry Ingersoll is a research chemist with the Du Pont Company in Wilmington, Del. Jane Hastings is working for General Electric in Pittsfield. She is also taking an active part in civilian defense, working as an adviser on decontamination of war chemicals. After graduation Sam Breck worked for the Cornell-Dubilier Corporation and is now with the United States Rubber Company. He was married in July, 1942, and is now living in Rutherford, N.J. Leon Keches writes that he would like to hear from other members of the Class. He is working at the Achushnet Process Company in New Bedford, Mass., and was married recently. He reports that Connie Schuerch is in the Air Forces and that Kennie Seltzer is also in the Army. Cliff Cracauer is at the United States Rubber plant in Naugatuck, Conn.

George Carnrick has just returned from Puerto Rico and is now a first lieutenant stationed at Camp Stewart, Ga. Milt Green is working at Chagrin Falls, Ohio, but when he wrote was classified as 1-A in the draft, so there is no telling where he is at the present time. John Burr is working on a metallurgical program at Notre Dame and apparently is having a fine time. He was married last June to Irma Garrigan from Detroit. Henry Rapoport, who received his doctor's degree in May, is now working for the Heyden Chemical Corporation in Garfield, N.J. He apparently has some free time to give to the Alumni Association, and I am sure Gary and I would be glad to have his help. Worden Waring is an assistant professor at Tulane University, where he is busy with the Navy V-12 program. Jack Kyger is still with the Mallinckrodt Chemical Works in St. Louis. Fred Magnusson is apparently about ready to be drafted and is at the same time planning to be married. Dick Powers is working for Dr. John Wulff, Associate Professor of Metallurgy at the Institute, and has recently moved to Marblehead. Al writes of his own activities in the United States Patent Office and of his being captain of a baseball team. The above information is greatly appreciated.

Dave Johnstone's mother reports that he is now a lieutenant, junior grade, in the Navy. Dave's wedding, in which John Danforth took part, took place in March. Bruce Duffett is a lieutenant stationed at Camp Hulen, Texas. Before entering the Army, he worked for the American Viscose Corporation, Parkersburg, W. Va., and was called in August, 1941. In one of his first assignments he was working in the harbor defense of Portsmouth, N.H., with Don

Ross and Nat Sage '41. Ted Brush, who was one of the first of our Class to be married, is now stationed at Fort McClellan, Ala., where he is living with his wife and two-year-old son.

There is more news to come, but we shall save it for the next issue. We want to thank all of you for your contributions, and hope they will continue. — H. GARRETT WRIGHT, General Secretary, 1124 Greenwich Street, San Francisco 9, Calif. THOMAS F. CREAMER, Assistant Secretary, Room 3-208, M.I.T., Cambridge 39, Mass.

1941

We have received a letter from Les Gott, remembered for his leadership of the 5:15 Club *Putsch*. Les wound up his second year of married life with the definite statement that each month improves things even more, if possible. Les has had a tough job up at Watervliet Arsenal in his own field of metallurgy and has come through well. We hear of John Bone carrying on at Fore River shipyards, while Sam Solar is with the Celanese Corporation in Maryland. Both lads are married or will be in the near future. Others of the old 5:15 gang are Bob Alfred and Butch Berman, both now engaged in the war.

Dick Barnard has been at Camp Lejeune, New River, N.C., and is now a lieutenant. Ray Berry, along with many other '41 men, is a lieutenant at Wright Field. Joe Bogert has recently been promoted to the rank of captain. Joe Andino is also wearing a couple of bars. He is at Camp Rucker, Ala. Captain Don Howard went home for a short rest in Winchester after prolonged duty in the Canal Zone. Don was one of the first of the '41 boys to leave the States. Dave Jacobson has added ensign to his name — not an uncommon thing among the boys. Lew Jester is still listing his Cambridge address. He has some electrical company in mind, no doubt.

Last we heard, Burnham Kelly was working for the National Research Council with headquarters in Washington, D.C. Gene Lawrence, whom we saw down here in New Orleans many months ago, is now a captain at Fort Story, Va. Our Chinese classmate, Chifan Lee, is in New York working with the National Resources Commission of the Chinese Government. Harlan E. McClure has been promoted out of the ensign class, as has Bob Hancock. John Brogan has left his Hollywood address and is now listing Oklahoma as his home state. Another lieutenant at Wright Field is William T. Butt, from whom we rarely receive mail.

Jim Cullison is assistant post engineer property officer at Camp Atterbury, Ind. We do not envy that property job one bit. Arthur Cumberland has been promoted to lieutenant commander. John Daniels has left New York City and is now working out in the sticks of Oklahoma. Looks like a sizable proportion of '41 men are going west. — Mike Driscoll, the fancy skating lad, has left the icy climates and is now located in San Salvador. Unless our information is wrong, Mike has been working in a civilian capacity. Another man doing good work out of uniform is Jim Terrill, who is at the United States Public Health Service in San Francisco. Another serviceman of the higher rank is Tirso G. Fajardo, a major in the Philippine Army.

1941 Continued

Leo Farr is now a lieutenant in the Signal Corps. Henry Faul is with the National Research Corporation in Boston. Gene Gwaltney of the textile laboratories has left the enlisted ranks and is sporting a shavetail's gold bar. Jim Hall is now with the American Manganese Steel Division in St. Louis, and Paul Hammond is with the Consolidated Shipbuilding Corporation in Wilmington, Calif. Bill Platt has left the West Coast to settle temporarily at Fort Worth, Texas. Charles Purdy was with the Bureau of Mines in Spokane, Wash. Harold Radcliffe has received his double bars, and Ed Ruckner is now known as Lieutenant Commander Ruckner. A new member in the enlisted ranks of the Army is Bob Shumaker.

A letter from Herb Moody brings a bit of news of the activities of said captain in the Ordnance Department. Formerly stationed at Weldon Springs Arsenal, Herb applied for overseas work. He should have known better, for that is, as we well know, the last way to get across. Herb is back at Aberdeen now proving away. He told of former hockey captain, Bill Cadogan, who was scheduled to be married to Ruth Brooks on June 26. We knew Bill and Ruth back at school, and think they will do a fine job of this living business. Mario Conti, that erstwhile freshman coach of basketball, is a lieutenant at Aberdeen. He is commuting to New York, where his wife lives. Herb tells of meeting Mason Downing in Pennsylvania Station early in June. Mason is a captain stationed in the South. Dave McNally is a captain stationed in Rome, N.Y.

We received a V-letter from Bob Blake of Tunisian fame but failed to note any mention of that award of the Order of the Purple Heart. We are glad to see him up and able to bend an elbow, and, if we haven't mentioned it before, we are proud to have him in our Class. Arnie Mengel received his "wings of gold," at the naval air station in Jacksonville, Fla. Joe Myers, who was stationed in Camp Polk, received his captaincy in the Corps of Engineers. Joe is married to the former Jane Lewis and has a son, Hugh Harriman, about six months old. Notice of Leo Farr's promotion to first lieutenant has also reached us. And your Secretary got in the right line and was handed a captaincy. Jim Ferguson, a lieutenant in the Marines, was at Pensacola when last heard of.

A letter from Alan Baum tells of research work at the Hercules Powder Company, followed by an assignment at the Radford Ordnance Works, but no '41 men have been sighted thus far. Charles Cole has been assigned as assistant ordnance officer at Luke Field, Ariz. George Mah is wearing sergeant's stripes down in Texas.

We have received an announcement of the wedding of Captain Arthur Walsh to Margaret Louise Snow back in April. Bill Welch, whom we managed to see quite often while stationed in Philadelphia, was married to Ruth Minnick in July. Bill was with Cramp Shipbuilding Company. Lieutenant John Hermistone, the only '41 man to be stationed on the new track at Technology, was married to Lora Gallagher in Texas on June 1. Johnny Sexton, also a lieutenant, exchanged vows with Margaret Millane in Springfield on June 30.

We definitely dislike this ending; for months we have been dreading its arrival.

It was, however, something which could not be avoided in this deadly game which so many of us are playing. The first two deaths of '41 men have just come to our attention. Lieutenant Horace J. Adelson, whom we all remember for his excellence in fencing, was killed on July 9 in a test flight at Wright Field. Cap was performing some experimental work for the Army. Lieutenant William S. Doughten, Jr., was killed in action in Sicily during the recent campaign. These men were good men, and their loss will be felt by the nation as well as by the Class. Our most sincere condolences are extended to the parents of these classmates. — STANLEY BACKER, *General Secretary*, 46 Bicknell Street, Dorchester, Mass. JOHAN M. ANDERSON, *Assistant Secretary*, Room 12-184, M.I.T., Cambridge 39, Mass.

1942

Pull up a fireplace, fall back in a soft chair, and relax. After the complete dearth of material for the July issue, your Secretaries sent out several pleas for help. Many thanks to those who helped us to strike a rich vein for this issue. Let's hear from the rest of you, even if it's only a post card giving an address.

From Janet Norris, IV, comes the following welcome travelogue of the architects: "Richard Bridge is now a first lieutenant in England and seems quite happy in his work. He tours the countryside on his leaves and reports the amazing fact that an American Army officer is as much of a novelty to the Britons as they are to him. John Carchia is also a lieutenant on duty in England. He reports that although the English are backward in domestic mechanical equipment, they have a very neat and pretty country. He, like Dick, is viewing all the available architectural masterpieces.

"Burton Eddy completed his graduate year with me in May, and is now at work for E. B. Badger and Sons in Boston, trying to find an evening on which to begin his master's thesis. Molly Howe is still working for Charles T. Main, Inc., in Boston. I haven't seen her for ages. Ann Humphrey Bintliff is shortly to grace Boston with her appearance. Her husband is starting internship in a Boston hospital.

"Norman Anderson, a lieutenant, is really in the theater of action, and as a result is the envy of his classmates who are still on duty but waiting. Kenneth MacIlroy, a lieutenant, junior grade, is still in Norfolk lending his knowledge of civil engineering to the Navy. (Architects really know other things beside architecture sometimes!) He called up recently on a few hours' trip to Boston, and I accused him of acquiring a Southern accent. He didn't use his usual Laramie lingo, but he's still the same happy guy.

"Ensign Lisa Minevitch left the graduate school at Technology in March to join the Navy, and loves her work in Washington. She looks wonderful in uniform and can match the snappiest Army or Navy salute available. Captain Charles Muller '41 was recently married to Linda Moody in Texas during his five-week leave from Bermuda. He's back on duty now. He says now he doesn't go out to find out how dull Bermuda is, but instead he writes glowing reports of his lovely wife.

"Mort Reed, a junior grade lieutenant, has been stationed on Long Island since

finishing a course at the Institute in January. He and wife Helen have just started a two-week leave in New England. Michael Slocum is a lieutenant, in the West Indies, we presume. At any rate, he swims in both the Atlantic and Pacific. Figure it out for yourself! He said he recently got tired of wearing gold, so his commanding officer suggested he change to silver, and now Mike, too, is a first lieutenant. He teaches courses in camouflage to his men and likes his job but not the climate. Burton Rockwell, a lieutenant, can just reveal that he is in Iceland. He writes that there are 'no trees and plenty of wind,' but he also says that he likes it there. He said the day of the New England hurricane of '38 was mild beside some of theirs. He spent a month last winter on a glacier, which gave him plenty of his beloved skiing. Cooper Milliken is still working for an aircraft plant in Buffalo. He came in from Maine by train about Easter time, and the architects tore back and forth twice to the airport with him until he finally got a plane seat.

"Dexter Wells is now working with the Chicago Regional Planning Association and likes his job very much. He still finds time to swim twice a day, grow some flowers, and dream out under the stars on the roof of his apartment house in true architectural style. Bill Zimmerman is working with E. B. Badger and Sons in Boston and has moved to Melrose with his wife, Connie, and their baby girl. Ed True '38 is also with Badger in Boston and has moved to Concord with wife Millie '42 and their cute little New Year's Day present, Bartlett True.

"Art Spear was married last summer and works somewhere in Cambridge. I haven't seen him recently. Larry Holden works for the Polaroid Corporation in Cambridge. Also haven't seen him lately. It seems that the boys who are farthest away write most. (*Secretary's note:* Exactly! I notice preponderance of information of the armed forces over the war-bonders and swing-shifters. How about that now?) Phyllis Winter has been working with Ann in Texas, but is now coming back to Boston with the Bintliffs. That is about all except for my own news. I have passed in my master's thesis and have finally had to say farewell to Technology after six years.

Donn Barber, a lieutenant who is much in the thick of things, wrote us a letter last May. He said that about all he can tell about his surroundings is his A.P.O. address. He wrote: "Life goes on smoothly from day to day — not too vigorously, but with plenty to do."

"I get a little news from some of the boys. Earle Foote, a private, first class, in the Marine Corps, should be getting pretty close to his second lieutenant's bars, as he is in the officer candidate course. Hank Henderson is a lieutenant, junior grade now, and I was made a first lieutenant in just short of a year. Hank bumped into John Lacy in Norfolk on one of his inspections. John is, according to Hank, working 20 hours a day and doing fine. One of my letters trailed him to four forwarding addresses, and was then returned to me, so he must be moving fast."

From Heinie Shaw came a letter about the much scattered Course XVI lads, who may be found almost anywhere there are or will be planes.

1942 Continued

James Girdwood, after and almost simultaneously with receiving the official title of second lieutenant in the Marines, walked to the altar with Jean Gascoigne. Chuck Smith and Rhea Day now use the same address as of great festivities on and about September 18. Shep Tyree and the former Barbara Jones may sometimes be found at home in Boston, or helping to keep activities going at 28 the Fenway. Jack Briggs and wife, Agatha, were married in Allentown, Pa., on May 18, and were the center of a celebrating crowd, including many '42 men. According to Mal Anderson, they have spent a very rural summer at a cottage on Chesapeake Bay (except for slight interference by activities at Bethlehem Steel). Olly Swope was also much present at the affair, with wife Peth, and is now wearing his ensign's uniform. Mal says that he and four other "madmen" have set up an outpost (competition?) with the "Cliff Dwellers" at 1507 Lee Street, Charleston, W.Va.

From Dave Greenberg, a lieutenant, junior grade, aboard one of our new aircraft carriers, comes word of his more recent activities. "I left the ship experimental unit at the Naval Aircraft Factory in Philadelphia only a few short weeks ago to join the fighting part of Uncle Sam's Navy. By a bit of luck, I managed to effect a swap with an officer aboard 'the good ship *Lollipop*' when she returned to Philadelphia for a little nut and bolt tightening after her shakedown cruise. I was getting quite fed up with the N.A.F. and rapidly wearing myself to a frazzle trying to get out of its clutches. I had a super job there but the "urge-to-see-some-action bug" kept biting me more each day. When I left, Filo Turner and Curtiss were still in Philadelphia, trying desperately to bribe the jailer into letting them out. Turner, at least, succeeded, I believe.

"This is a grand ship with a great group of officers and men. And so far, I'm really nuts about this sea duty. Also on board is another brother Beaver: Fred Lamb '38, VI-A, a pilot in the squadron based aboard. He is really one swell fellow." Dave expressed much interest in hearing about the whereabouts and doings of XVI men.

Yours truly, the more vagrant of the two Secretaries, has run the gauntlet of primary and part of basic pilot training in the Army Air Forces, and is now deep in the mysteries of dead reckoning, fuel-consumption charts, celestial bearings, and so on, at navigation school in the wilds of Texas. Spent last week end at Bandera, in the heart of the Texas dude-ranch country, and in and among the horses up popped Lieutenant L. S. Hall '39, XV, and frau. He is putting the finishing touches to his pilot's wings at the advanced flying school, Waco, Texas, where Captain B. C. Emerson '39 is a congenial classmate of his. Captain Fuzzy Phinizy '38 of "flying kitchen stove fame," dropped in at Waco last week end during the hurricane alert with a bunch of planes from Matagorda Island's gunnery training school for pilots. This life, in and among the hunting, fishing, and flying, is quite agreeable to him. Your Class Agent (hint! hint!) finds himself now much in pursuit of a doctor's degree at Technology. For now, this about takes care of the news bulletins. Tune in to this same station at the same time next

month, and remember it's your fan mail that keeps this program going. And how about that small fee to cover packaging and mailing? — FREDERICK W. BAUMANN, JR., *General Secretary*, Orchard Lane, Golf, Ill. KARL E. WENK, *Assistant Secretary*, 228 Marlborough Street, Boston 16, Mass.

1943

Once again it is my pleasure to assemble the news of the Class. I look forward to writing really newsy articles in this column during this year. In normal times I would send some kind of an information-finding letter to each of you, but my present assignment at the officer candidate school at Aberdeen Proving Ground makes it impossible for me to do that. However, all is not lost. We shall consider this article as the information letter. It is now up to you to write me even such a lowly epistle as a post card, telling me what you are doing, whom you have seen, and all other interesting data. Let's go now '43! Get that vital information to me in short order.

At Aberdeen Proving Ground in officer candidate school with me are Charlie Crocker, Johnny Harsch, Dave Mitchell, Eliot Payson, Stan Roboff, Curt Smith, and Gus Smith. They are all dreadfully tired but look forward to November 6, when we shall graduate. They ask me to say hello for them. Fred Hopewill is also on the post, as are Stan Warzeski and Sherman Sackheim, both lieutenants. Stan has been stationed here since his graduation from officer candidate school, but Sherman spent some time in Chicago and has recently returned to this post. Mort Schultz and Russ Bowen are at Edgewood Arsenal. Stan Roboff has seen them and says they are thriving.

I owe an apology to Stan Porosky for not replying to the letter he wrote me last June. Well, Stan, I shall show you that I can write letters by replying next time you write to me. His letter ran, in part, as follows: 'Ken Gifford and I have both been assigned to Camp Edwards. Ken later will go to radio school at Harvard. Did you hear that Ralph Leader was married? You can get the details from Chuck Lawson, who has also been assigned to study radio. My work is interesting. I am assigned to an outfit pretty well along in training, so might see some Germans or Japs before the show is over.'

In a letter from Al Shairman, we got the following news: "I came to Washington with Sid Siegel, III, and we roomed together. He is working as a metallurgist at the Naval Research Laboratory. I am working as a mechanical engineer in the Naval Ordnance Laboratory. There are no classmates at Sid's lab, but a few of the boys are with me. Art Black and Andy Hillhouse are working here. I bumped into Bob Rouffa the other day. He is an ensign and is going to the ordnance school at the Navy Yard. Also from M.I.T., but not a classmate, is James E. Mulligan '33, Assistant Professor of Electrical Engineering at the Institute. He is in the same group as I am, and is really swell to work with."

"I was the first of the bunch here to get married. On April 11, I was married to Doris Cohen, Simmons '41, of Brookline. As I only had a very few days off, I did not even get over to school, but took my bride right back to Washington with me. Sid

THE TECHNOLOGY REVIEW

followed me soon afterward. He was married on May 23 to Lillian Hozid of Dorchester. The other boys are still bachelors, but Sid and I know how much they are missing. We have apartments in the same house, overlooking Bolling Field.

We hear that Enos Frantz Kreider is receiving engineering instruction at the Westinghouse Electric and Manufacturing Company designed to fit him for active participation in the company's war production program and for future leadership in the electrical industry. Great stuff, Frantz.

From the Navy we have the following news: On September 1, William H. Peiler was graduated from the naval air training center at Corpus Christi, and was commissioned an ensign in the Naval Reserve. Israel Z. Lenzner is at Notre Dame receiving basic training, while William V. Engels is also in the Naval Reserve.

Says the La Grange, Ill., *Citizen*: "William Strohmeyer has been connected with Consolidated in San Diego, California. He is doing test flight work and very happy at it." — We understand that Richard B. Stambaugh '41 is one of the research experts to operate at the Goodyear Tire and Rubber Company's new research building in Akron. — From Boston comes news that Audrey A. Bill, a first lieutenant, is now in the medical department in the WAC training center at Fort Devens. She has the distinction of being the first woman doctor to be assigned to active duty in the First Service Command. Good going, Lieutenant Audrey Bill!

Judging from the long list of names in front of me, Cupid has been working overtime this summer. From Boston comes news that Joseph F. Boyce and Frances E. Goulding are engaged. In Alexandria, Va., we see that Lieutenant Jack W. Reese and Helen V. Battis were married on May 26. William B. Voorhis is engaged to Loretta Nelson. Elizabeth M. Bell and John H. Scott, Jr., were married in Marblehead, Mass., at the old North Church. Benjamin Parran, 3d, a lieutenant in the Marines, and Elizabeth M. Barron were married in Washington.

The news about all these weddings and engagements is great, but as Secretary I beg you to take it easy or in about two months there will be nothing for me to write about. — Ensign George A. Slifer, Jr., and Elizabeth Johnson were married in Norfolk, Va., at the end of August. George is now with the construction corps of the Naval Reserve. Guy Billings, another ensign, and Norma J. Mosher were also married recently. There must be something about being an ensign because I find three more of them who have been recently engaged. They are Carleton F. Bryant, Jr., to Elizabeth Hampton; Sidney F. Greenwald to Barbara Arustein; and Douglas G. Fenton to Jean I. Giltner. Doug is now stationed at Harvard University.

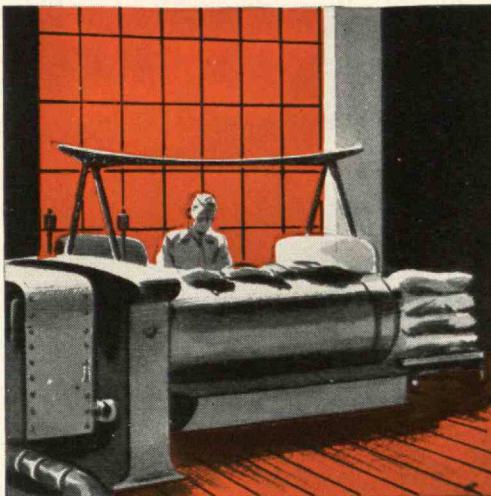
Early last June, Donald C. Berkey and Doris MacGillivray were married in Boston. Lieutenant Edmund R. Swanberg married Ruth P. Mattson in Norwood, Mass. John J. Hess, Jr., who is a research engineer with the Sperry Corporation, is engaged to Joan I. Trudinger. Alfred R. Meyer was married to Dorothy D. Fry in Plymouth last June. Rube and Mrs. Meyer are now in South Bend, Ind. — CLINTON C. KEMP, *General Secretary*, 988 Memorial Drive, Cambridge 38, Mass.

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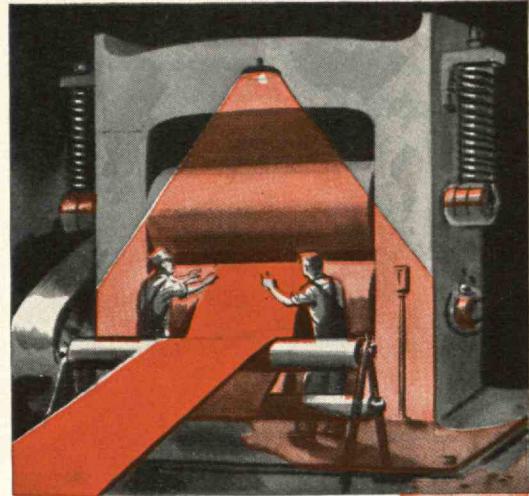
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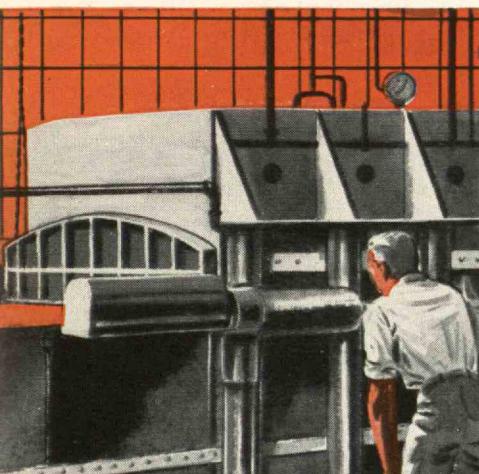
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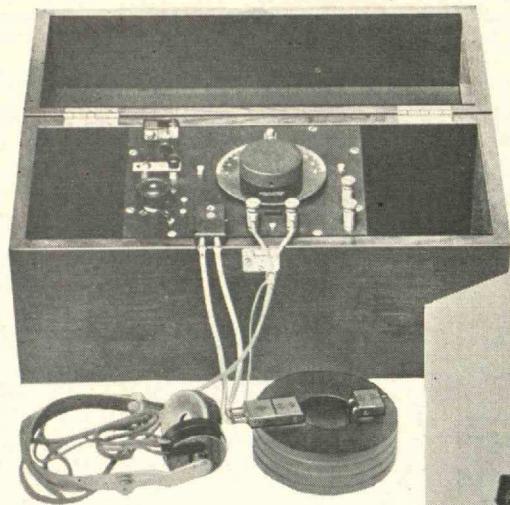
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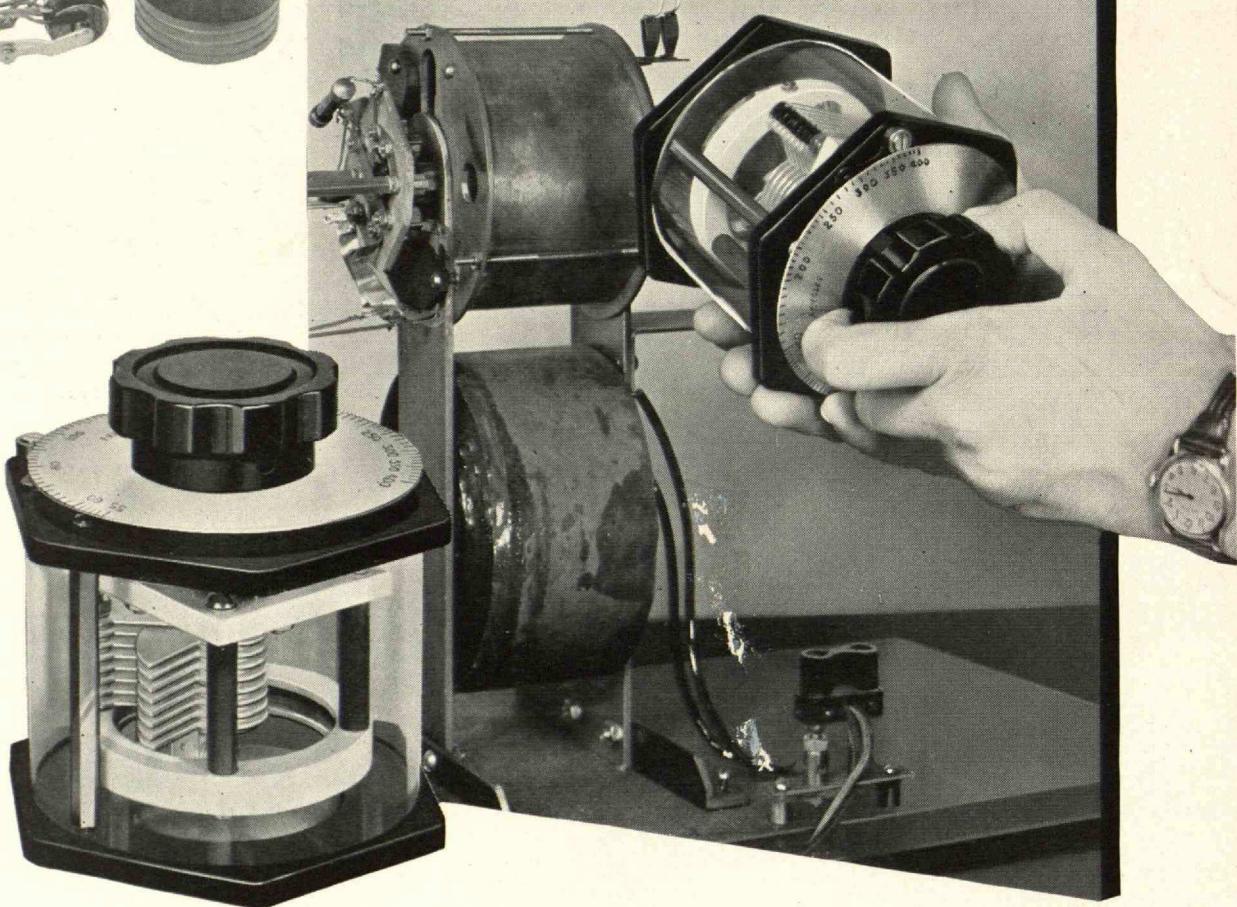
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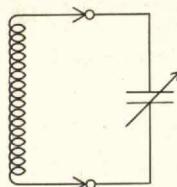
1943

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